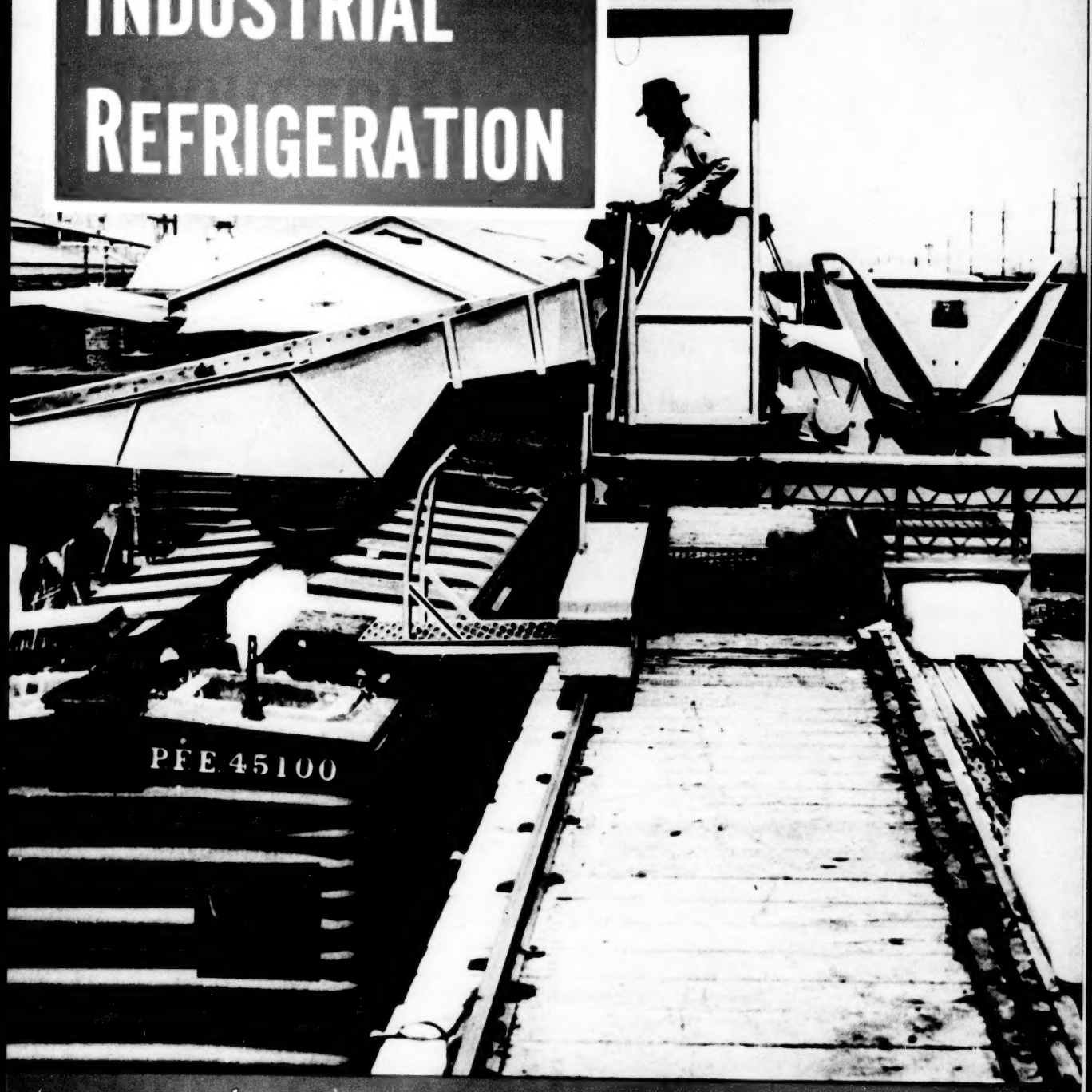
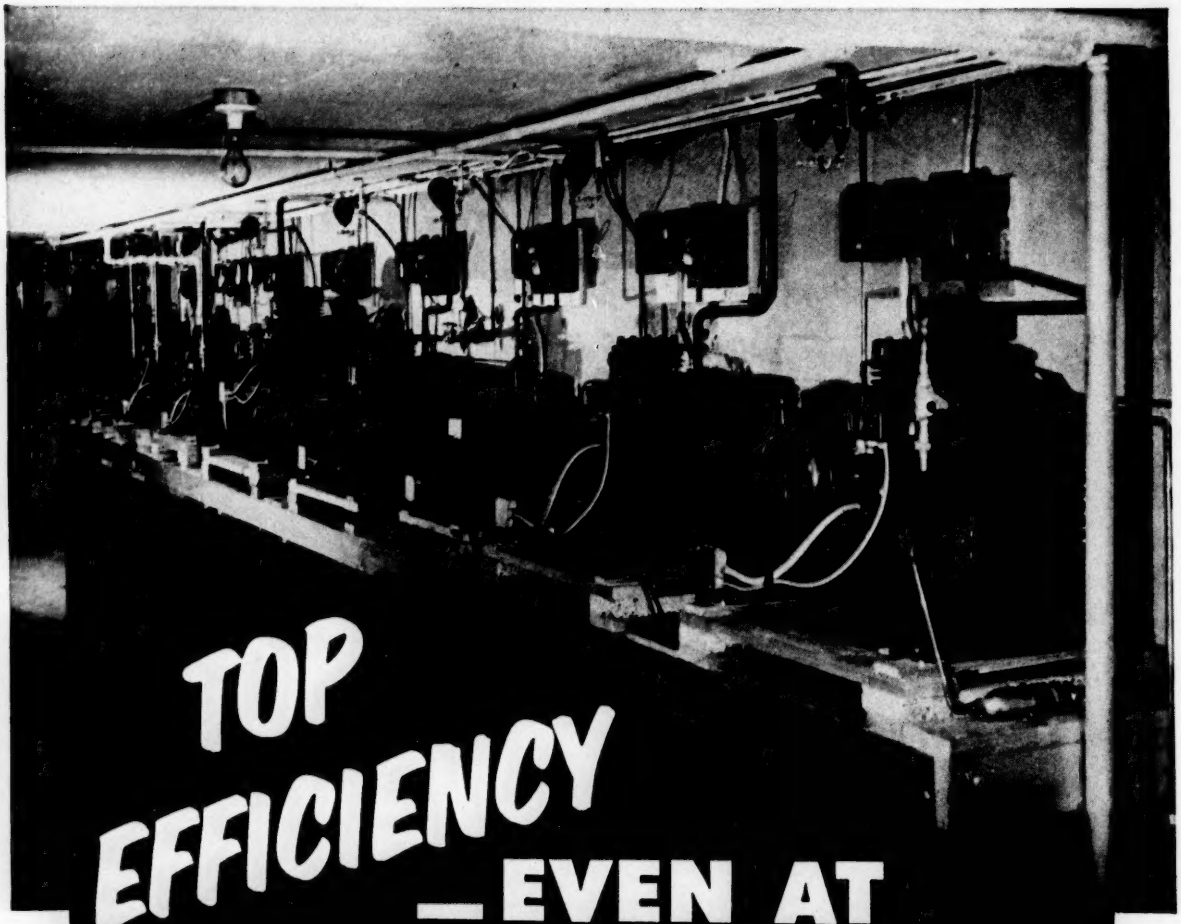
INDUSTRIAL REFRIGERATION



Formerly Refrigeration Journal

Frost Heaving of Freezer Room Floors ..... Page 17
Automatic Car Icing Stations Refrigerator Cars ..... Page 19
Refrigerated Barge For the Army ..... Page 21
Modernization of Auxiliary Pumps Pays ..... Page 23

NOVEMBER, 1954



TOP EFFICIENCY — EVEN AT MINUS 100° F.

WHEN your compressors are lubricated with *Texaco Capella Oil (Waxfree)*, count on smooth, clean, trouble-free performance. You'll get top efficiency even at temperatures down to minus 100 degrees F. — because *Texaco Capella Oil (Waxfree)* will not precipitate wax in systems.

Texaco Capella Oil (Waxfree) exhibits exceptionally low haze and floc temperatures. Its stability and resistance to oxidation are outstanding. Moreover, *Texaco Capella Oil (Waxfree)* will not foam, is moisture-free and compatible with all refrigerants.

To meet all compressor requirements, there is a complete line of *Texaco Capella Oils (Waxfree)*. They are packaged in 55-gallon and 5-gallon drums, 1-gallon cans — and the more popular grades in 1-quart containers.

A Texaco Lubrication Engineer will gladly help you select the oil to assure increased efficiency for your compressors. Just call the nearest of the more than 2,000 Texaco Distributing Plants in the 48 States, or write The Texas Company, 135 East 42nd Street, New York 17, N. Y.

TEXACO

TEXACO Capella Oils (Waxfree)

FOR ALL REFRIGERATING AND AIR CONDITIONING COMPRESSORS

TUNE IN . . . TEXACO STAR THEATER starring JIMMY DURANTE or DONALD O'CONNOR on television . . . Saturday nights, NBC.

VESTIBULE TYPE TRACK DOOR

YEARS OF SATISFACTION

"Butcher Boy"

Quality Since 1885

WHY "BUTCHER BOY" DOORS ARE THE FINEST REFRIGERATOR DOORS BUILT!

These Exclusive Features Furnished At No Extra Cost

DOOR STRUCTURE

- X Type Diagonal Bracing
- INTERLOK No Sag Corner Construction
- Permits maximum insulation

HARDWARE

- Stainless

APPEARANCE

- SOLID
- Vertical, precisely milled astringent panels
- Modern and super durable hardware applications

When a Man Thinks Twice ...He Makes Comparisons

COOLER FREEZER | X-52 PLYWOOD | LOW TEMPERATURE | SUPER FREEZER OVERLAP

BUTCHER BOY REFRIGERATOR DOOR CO. HARVARD, ILLINOIS

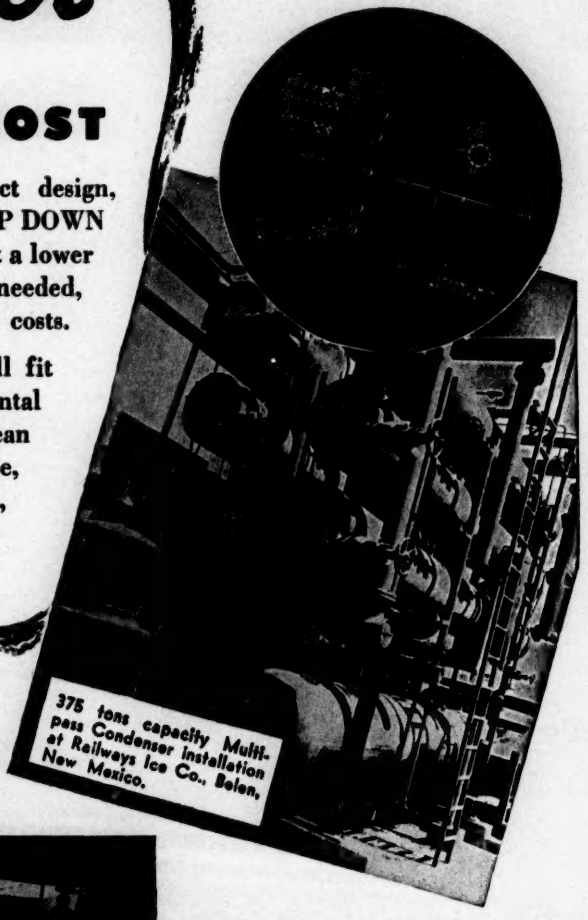
$ave Power and REFRIGERATION COST

Vogt Condensers, because of their correct design, STEP UP the rate of heat transfer and STEP DOWN head pressures. With the liquid delivered at a lower temperature, smaller compressor capacity is needed, saving in original as well as operating costs.

One of the two basic types illustrated will fit your operations exactly. Install Horizontal Multipass (closed type) for use with clean waters. Where the water is hard, forms scale, contains mud or promotes fungus growth, Vertical Single Pass (film type) which can be cleaned in operation, are recommended.

Horizontal Multipass Condensers
(Closed Type)

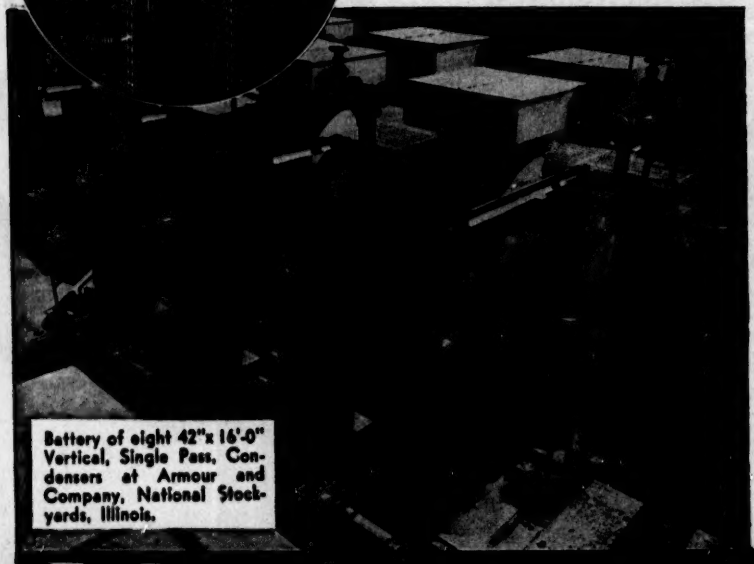
Water circulated in tubes traverses the length of the unit a number of times as determined by baffles in the heads.



375 tons capacity Multipass Condenser installation at Railways Ice Co., Belen, New Mexico.

Vertical Single Pass Condensers
(Film Type)

Patented ferrules give equal distribution of water to and over the surfaces of all tubes in a unit.



Battery of eight 42"x 16'-0" Vertical, Single Pass, Condensers at Armour and Company, National Stockyards, Illinois.

HORIZONTAL and VERTICAL TYPES SHELL and TUBE CONDENSERS For Every Service

Write For Bulletin RC-2

HENRY VOGT MACHINE COMPANY
INCORPORATED
1000 W. ORMSBY ST., LOUISVILLE 10, KY., U.S.A.
Branch Offices: NEW YORK, CHICAGO, CLEVELAND, DALLAS, PHILADELPHIA, ST. LOUIS, CHARLESTON, W. VA.

Vogt REFRIGERATION CONDENSERS

LETTERS

(Letters to the editor are welcome from readers of INDUSTRIAL REFRIGERATION on any subject of general interest.)

First Overall Picture of Industrial Refrigeration

Wilmington, Del.

Congratulations on a very interesting and comprehensive story of industrial uses for refrigeration (August issue). To the best of my knowledge, this is the first time that such a complete overall picture of such applications has been printed in one piece and I'm sure that your story will be of interest and value both to manufacturers in revealing possible new markets, and to users of refrigeration in discovering new applications.

We are glad that the information we could provide on industrial refrigeration proved helpful in putting together your story and we hope you will call on us if we can be of any further service.

F. R. ZUMBRO
E. I. duPont deNemours & Company.

More on Activated Carbon

Columbus, Ohio

CONGRATULATIONS on the activated carbon Air Recovery story by Homer Bird in the September issue. We all think you handled it very well indeed. Incidentally, you might be interested to know that Barnebey-Cheney activated carbon has just turned up in another new, and somewhat unexpected field. The new filter tip Herbert Tareyton cigarettes which have been placed on the market in the last few weeks are using very finely powdered Barneby-Cheney carbon impregnated paper filters, thus effecting both a mechanical filter, which removes smoke solids, and a chemical filter which absorbs undesirable excess gases and vapors.

NICHOLAS M. EGOROFF
Byer & Bowman, Advertising

Bread Freezing Interests

Portland, Oregon

As subscribers to your publication, we are interested in obtaining four copies of the last issue, October, 1954. We are most interested in the article on bread freezing.

M. A. POSTLEWAITE,
Western Engineers, Inc.

Industrial Refrigeration

formerly **ICE AND REFRIGERATION**

Now in its 63rd Year of Publication

J. F. NICKERSON, FOUNDER

Vol. 127 **November, 1954** **Number 5**

Contents

Frost Heaving of Freezer Room Floors 13
Ice Story is Featured on Television 16
Underground Refrigerated Storage to Provide Freezer Space For Frozen Foods 17
Automatic Car Icer Cuts Time Required for Servicing Refrigerator Cars 19
Refrigerated Barge for the Army 21
Atomic Uses and Other Engineering Ideas Feature Power Show 21
536 Tons of Ice Used to Build Summer Ski Slide in Chicago 24
Air Conditioning Adds to Floor Space 26
Auto Tanks Tested in Cold Weather Hangar 27
National Ice Convention Builds Program on Problems Speakers Entertainment 29
Informal Conferences and Forums Will Feature ASRE Meeting 31
National Association Practical Refrigerating Engineers 31
Modernization of Auxiliary Pumps Pays 31
News Notes and Chapter Activities 35
Question Box 39
Diversified Program Presented at Convention 44
New Freon Refrigerant Provides Wider Application in Industry 54

Departments

What's New in Equipment ... 4
Press Briefs 8
The Spotlight 11
Coming Conventions 51
People 52
Deaths 52
Manufacturers News 55
Catalogs and Bulletins 56

The Cover:

The new Preco refrigerator car icing machine in service at Loma Linda Yards of Southern Pacific near Colton, Calif., operated by Pacific Fruit Express Company takes ice cakes off the dock conveyor (center of photo) crushes it to the desired size and delivers it to both car hatches simultaneously. One man, one minute to ice a reefer. The mechanical icer travels between two parallel tracks of refrigerated cars, at icing station to service cars at either side of platform. See article on page 19.

Published Monthly by NICKERSON & COLLINS CO.

General Offices: 433 N. Waller Ave., Chicago 44, Ill. Telephones: AUstin 7-1303-04-05

H. T. McDERMOTT, EDITOR AND PUBLISHER — E. R. CURRY, MANAGING EDITOR — J. R. KELAHAN, TECHNICAL EDITOR — H. D. BUSBY, ASSOCIATE EDITOR

ADVERTISING—O. RHODIUS ELOFSON, DIRECTOR — EDW. DAVIESON, Advertising Representative

HELEN B. SMITH, SECRETARY — E. P. SWANSON, SUBSCRIPTION — V. S. SMITH, PRODUCTION

CHANGE OF ADDRESS—Notify publisher and your local post office promptly of change of mailing address to avoid non-receipt of copies. Copies incorrectly addressed, because of failure to notify publisher, cannot be replaced. Upon request, post office will provide, without cost, convenient "change of address" mailing cards.

INDUSTRIAL REFRIGERATION, Vol. 127, No. 5 Published monthly at 433 N. Waller Ave., Chicago, Ill., U.S.A., by Nickerson & Collins Co. Yearly subscription in the U. S., $2.00 per year; other countries, $3.00. Single copies, 25 cents.

Copyrighted 1954 by Nickerson & Collins Co.

Acceptance under Section 34.64 P. L. & R. authorized.

Industrial Refrigeration is indexed regularly by Engineering Index, Inc., and is microfilmed for library use by University Microfilms.

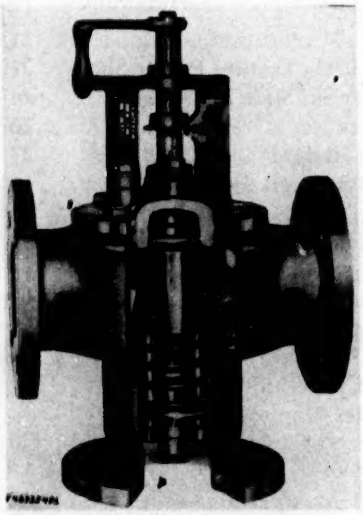
The entire contents of this journal are covered by general copyright, and special permission must be obtained from the publishers of same before reprinting long extracts or reproducing illustrations; but editors desiring to do so are welcome to use not more than one-third of an article, providing credit is given.

What's New

MACHINERY
APPLIANCES • PROCESSES

New Type Thermostat in New Regulators

TEMPERATURE regulators containing a new-type thermal element have been developed for temperature control application in the range of 120 to 190 F by the Fulton-Sylphon Division of Robertshaw-Fulton Controls Company. The new regulators are supplied as an integral part of three-way valves for water and oil coolants.



Cutaway view of new temperature regulator

Changing over from the conventional liquid or gas-filled thermal element, the new regulators (nos. 1280 and 1281) contain an unusual Power-Pill unit, which is charged with a solid, wax-like compound. When subjected to heat the special wax-like compound imprisoned in the Power-Pill unit melts and expands, generating an extremely powerful force by comparison with older thermostatic units. The heated liquid returns to a solid state upon cooling.

Because they employ the Power-Pill units, the new regulators are insensitive to internal pressures of the system in which they are installed, an important performance factor where systems are under pressure. They are considerably smaller in size and lower in cost than existing regulators for similar applications, the company said.

The regulators contain from one to four Power-Pill units, depending upon the size of the valves, which are available in sizes ranging from 2 to 6 inches. All repairs, replacements of parts, and adjustments can be made without removing the valve from the pipe line, it was stated. Temperature settings are available in the specified range in 10 to 15 degree increments, and may be altered by changing Power-Pill units.

All valve bodies are fabricated from bronze with flanged ends. Other parts are brass and cadmium-plated steel. One of the new regulators is equipped with a quick-acting manual operator which can be used to override the thermal element for special situations or for emergency use to open or close the valve.

The illustration (above) reveals poppet valve (center, in cold position), which is pulled downward as temperature increases and expands a Power-Pill element. Power-Pill unit is positioned inside spring at bottom. Water (or lubricating oil) flows up through bottom opening and is diverted through by-pass connection "B" or through cooler connection "C". The hand crank is used to over-ride automatic action or for emergency manual control. Model No. 1281, not shown, is identical except the manual operating feature is not furnished.

Plastic Tote Pan

A NEW lightweight, non-corrosive, reinforced fiberglass plastic tote pan has been developed by the Molded Fiberglass Tray Co., producers of Toteline products, for handling small parts, food, confectionery products, meats and chemicals.

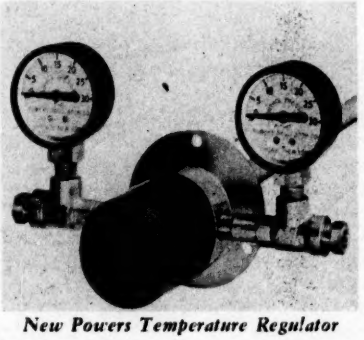
The new tote pan provides a 50 per cent weight reduction over its metal counterpart and has stacking pads molded on the outside of each corner for secure locking and for additional reinforcement. It is dimensionally stable from minus 60 F to 250 F. The manufacturers say it will not dent or bend out of shape, and that it resists most chemicals, has a smooth, non-porous, easy-to-clean surface which requires no painting or other maintenance, even if they are stored out-of-doors. Handles are molded in each end for easy lifting. Seamless construction makes for easy cleaning, even with steam.

The new Toteline plastic pan

The pans are available in a wide range of colors for quick identification and labels can be permanently molded into the surface. The product is ideal for industries with floor stress problems or those which contend with restrictions on weights which employees can lift.

New Temperature Regulator

A NEW and inexpensive non-bleed pneumatic temperature control is now available for operation of such devices as diaphragm valves, damper motors and other types of control equipment. Known as the Powers Limitem, it is a differential expansion type control designed for precision regulation of heating, cooling, ventilating, air conditioning, dew point control and industrial processes.



New Powers Temperature Regulator

Temperature range of the new control is from 35 to 135 F. The concealed graduated dial permits quick, easy adjustment. Sensitivity can be adjusted from ⅛ to 2 psi per 1 degree temperature change — gradual acting.

Body OD is 1-¾ inch and averaging bulb length 18 inches with ⅜ inch pipe or flange connection. Simple design and rugged construction provide dependable operation. Available with direct action only. Passage of air pressure is increased as temperature rises.

Fire Rated Insulation Finish

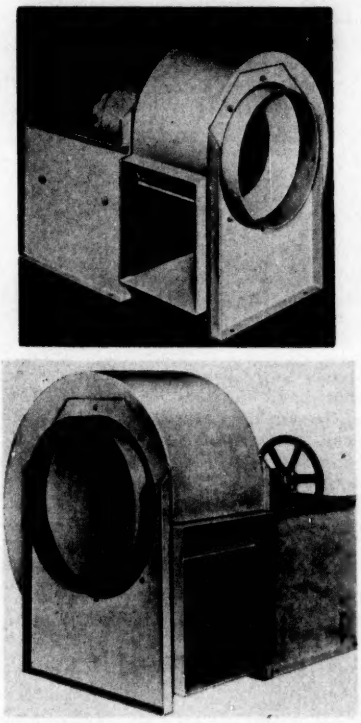
THE FIRE-BAN, a light weight insulation hard surface coating which carries the Underwriters Laboratories label and claim to inhibit mold growth, and which may be applied at temperatures below freezing, is now offered to the refrigeration industry through insulation contractors by E. H. O'Neill Floors Co., Cicero, Illinois.

The product is a mineral and chemical powder composition which is mixed with water and applied to insulation in 1/16 to ⅛ inch thickness by trowelling, brushing or spraying. Fire-Ban is recommended for use over all types of wall, ceiling, pipe, duct and tank insulations where a hard light weight easily cleaned and abrasion resistant surfacing is required. It is furnished in white and 12 colors.

Developed by the Cicero firm after more than eight years of field and laboratory testing, Fire-Ban carries the Underwriters Laboratories, Inc. label and its use frequently allows rate reductions in fire insurance. It is claimed that the material may be installed under conditions where temperatures are below freezing and down to 0 F. In use it is not affected by temperatures ranging from −100 to + 300 F. Fire-Ban is available through any insulation contractor.

New General Use Fans

A LARGE volume fan, available with direct or V-belt drive, for standard or heavy duty and compactly designed for easy installation and quiet performance has been introduced by the Chicago Blower Corporation. All fan ratings are certified in accordance with the Standard Test Code jointly adopted by the NAFM and the ASHVE. Housings and bases are fabricated of extra-heavy sheet steel with continuous welded seams. Streamlined fan inlets account for the high efficiency and low operating noise levels, it is claimed. They can be supplied with six different types of acid resistant coatings.



New Chicago Blower Fans. Above, direct drive. Below, V-Belt drive.

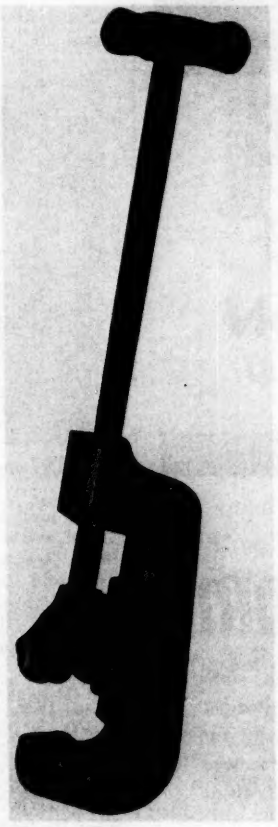
These fans are furnished with a forward curved wheel in all heavy duty types. Wheels are of all-welded construction and balanced.

Self-aligning, grease-lubricated ball-bearing pillow blocks are furnished as standard. Single phase fractional sizes are available.

The direct drive fan, with a forward curved wheel, is recommended for commercial use. Ideal for exhausting kitchen odors, supplying air for forced draft in boiler rooms, ventilating public garages and extensive ventilating and cooling. The belt-driven fan, with its quiet operation, makes it suitable for use in public buildings such as hospitals, schools and apartment buildings. The direct drive furnishes volumes from 400 to 3250 cfm and pressures to 1½ inch sp. Furnished in five sizes. The V-belt drive furnishes volumes up to 18,000 cfm and pressures to 1½ inch sp. Manufactured in 14 sizes from 7.15/16 to 33 inch wheel diameters.

Heavy Duty Pipe Cutter

A NEW heavy duty pipe cutter with an extra strong frame has been added to the Pipemaster Line by The Erie Tool Works of Erie, Pa. This new cutter is lighter in weight without sacrificing strength, fits the hand comfortably and has an unbreakable formed steel handle. Precision machining guarantees accurate tracking of the cutter wheels. Another feature is quick-release pins allowing instantaneous changes of cutter wheels or change-over from cutter wheels to rollers. Old type pipe cutters require a drift pin and hammer to remove wheels whereas the Pipemaster pins are removed with one hand by depressing a spring.



New Pipemaster heavy duty pipe cutter

Freon-22 Packed in Disposable Containers

INTRODUCTION to the refrigeration industry of Freon-22 in disposable Charge-A-Cans has been made by the Aerosol and Refrigeration (Eaton Chemicals) Division of American Potash & Chemical Corporation. This marks the first time in the refrigerant and chemical industries that Freon-22 has been packaged in the disposable containers, which are similar to aerosol containers available for home use.

Distribution of the new packaging for the refrigerant brings to four the number of such products available in Charg-A-Cans, inasmuch as Freon-12, Freon-114 and sulfur dioxide already are on the market.

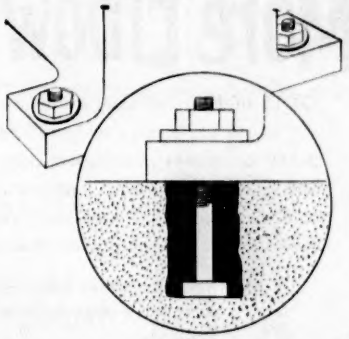
Main advantages of Charg-A-Can packaging, according to American Potash & Chemical Corporation, are savings in labor, material and time in servicing refrigeration units. In addition, no deposit is required on the disposable container, and the new type packaging results in controlled purity and accurate measurement.

Freon-22 is being packaged in a two-pound container, whereas other American Potash & Chemical Corporation refrigerants are marketed in one-pound Charg-A-Cans. The reason for this is that the usual charge of Freon-22 is approximately two pounds.

American Potash & Chemical Corporation refrigerants in Charg-A-Cans have found widespread use in the refrigeration industry because they can be carried handily by the serviceman, thus eliminating the previous necessity of handling heavy storage equipment or transporting refrigeration units to service shops for repair in many cases.

Anchor-Set Compound

A NEW material that quickly and permanently secures anchor bolts in concrete has been introduced by Rock-Tred Corporation, Skokie, Ill. Taking its name from the job it does, "Ankor-Set" is a powdered compound which fast-cures when mixed with water to form a hard, impact-resistant, exceptionally high-compress on strength material. It is non-shrinking with controlled expansion, to insure a tight, permanent bond. Sets in one-half hour, and quickly forms an extremely durable bond that becomes an integral part of the floor. It is recommended for permanent anchoring of machinery, engines, boilers, motors, drives, conveyors, rails, bed-plates, flanges, seats, partitions, etc. Comes packaged in 50, 125 and 300 lb. fibre drums.



Showing bolt imbedded in concrete with Ankor Set

Heavy Duty Ice Crushers

THE recently announced Link-Belt series 590 ice crushers used for the ski slide in Chicago, September 17-19 was developed for high capacity and heavy duty service. Four models are available and have capacity of 45 tons per hour. This series supplements a complete line of all types and sizes of icing equipment to meet a variety of icing requirements.

OZITE
PIPE
COVERING
INSULATION
GIVES

More Elbow Room!

OZITE All-Hair felt lasts a lifetime . . . applies without waste . . . is easy to install for curves, straight pipes or valves . . . renders low conductivity for efficient heat barrier . . . allows close temperature control . . . provides maximum capacity of refrigeration units. . . cuts power consumption.

Get the facts about time-proved OZITE. Write for 4-page Bulletin #300.

NO SHAPE IS TOO COMPLEX

AMERICAN HAIR & FELT COMPANY

MERCHANDISE MART • CHICAGO 54, ILLINOIS

New Steam Cleaner Jet Sprayer

RAPID CLEANING of motors, compressors, condensers, etc. without the necessity of dismantling can now be done with the new Henry "Steam Kleen" Jet Sprayer, a product being introduced by the Henry Flow Control Company, Melrose Park, Ill.

This "Mighty Midget" Model No. 111 embodies numerous exclusive patented features which increase efficiency and save time in man-hours for the busy contractor and serviceman. Steam jet feed is operated by finger tip control. Changeover from wet to dry steam is instantaneous and is accomplished by merely tilting the unit from horizontal to vertical position. It degreases as it cleans.

Dry steam position

Wet steam position

This ideal portability is due to the light weight of the device. Actual weight is approximately 16 lbs. ready for operation. The Henry "Steam Kleen" Jet Sprayer has a capacity of ½ gallon of water and can be brought up to operating temperature and pressure in 20 minutes using cold water. With hot water the waiting period is considerably shortened.

Normal degreasing and cleaning time is approximately 20 minutes. Unit is electrically heated, thermostatically controlled, and operates on any 110 to 115 volt circuit. It is fitted with a steam safety valve. Unit is manufactured to comply with ASME Miniature Boiler Code. Literature and full particulars available.

Frigidaire Offers Improved System For Refrigerator Cars

TO MEET the demands of shippers for a refrigerator car system that can be used to keep fresh fruits and vegetables and other fresh perishables as well as frozen commodities safe in transit has prompted a modification of the Frigidaire system devised for that purpose.

Frigidaire refrigeration unit (left) and the Diesel alternator-generator unit (right) installed in machine compartment of railway car. The combination cooling-heating coil is located in back of the bulkhead above.

This newer food preservation system, it is claimed, can operate approximately 2-½ weeks without refueling or other attention, while maintaining any pre-selected temperature from minus 5 F to plus 70 F. This is accomplished automatically regardless of the wide range of outside temperatures that may be encountered in a transcontinental trip at any time of the year. The balanced design of the equipment controls humidity and air movement within the cargo area to precise needs.

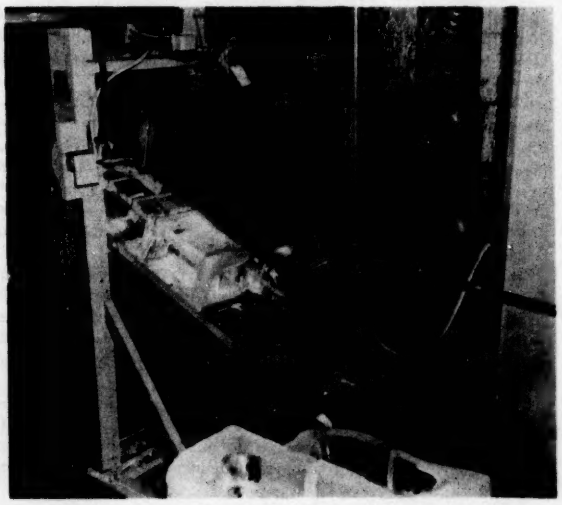
The complete equipment consists of four major packages. The primary source of power is a continually running diesel engine alternator generator. This supplies electrical power for driving the refrigeration equipment or for use with the electrical heaters that provide heat necessary for the preservation of perishable foods when required in winter weather.

The refrigeration equipment consists of three packages, each of which is delivered to the car builder as a completely fabricated unit. These parts are made up of a compressor assembly charged with refrigerant, a cooling-heating coil assembly, and a blower unit that circulates the air within the car.

The engine-alternator and the compressor unit are shock-mounted on the floor in a ventilated machine compartment at one end of the car. The cooling-heating coil assembly and blower unit are mounted in the bulkhead between the machine compartment and the cargo space. When bolted in place the coil and compressor are quickly inter-connected.

New Power Lift For Ice Blocks

A NEW "Eskimo" power lift is announced by Ballard Sales Co., of Fort Worth, Texas. This new machine is engineered to fit in with most of the present ice crushing equipment in use. It speeds up the crushing and sizing operation by eliminating the lifting of ice by hand into the crusher. It eliminates back injuries due to strain of lifting, keeps ice tongs from falling into the crushers and produces more crushed ice per hour.

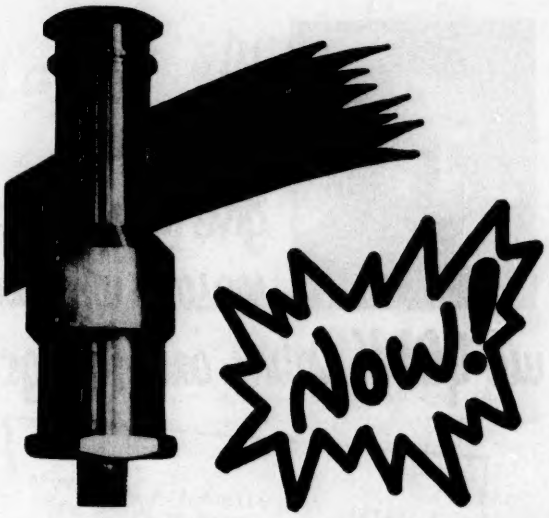


Eskimo power lift feeds block of ice to crushing equipment.

The unit requires very little space and is designed so that in sizing operations particularly, the lift may be run down while there is still about 100 lbs. of ice to be crushed. The next block of ice may then be put on the power lift and be in position before the crusher is empty. This unit is usable on eitehr 50 lb. or full block crushers.

In operation of the 50 lb. crushers, this unit has a stop on it so that the block may be cut half lengthwise. The first half of the block is allowed to be crushed, then the next half slides into position to be crushed. When about 100 lbs. remains, the lift is returned for another full block. Full block crushers: the full block, of course, is slid into the crusher. When about half the block is left, the unit is returned for another block.

The height is adjustable to any requirement. All parts coming in contact with the ice are galvanized for sanitation.

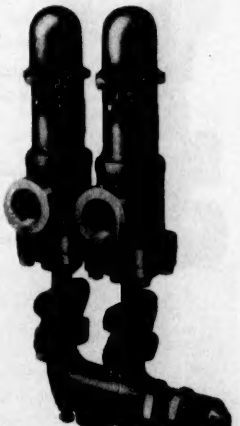


A Safety Valve That Will Pass All Code Requirements, in ⅜" Size

Refrigerating Engineers will welcome this addition to the line of Frick Type AF Safety Valves, made heretofore in sizes of ½", ¾", 1" and 1-¼".

These superior valves have self-aligning moving parts of stainless steel. They close tightly after being opened, and handle several times as much gas as older designs of the same pipe sizes. They are accurately set, sensitive, and dependable. The only refrigeration safety valves that will meet ALL the requirements of the latest A.S.M.E. and A.S.A.B.-9 Codes.

For real safety, protect your refrigerating equipment with these Frick valves. Write for literature today.



Two larger Type AF Safety Valves mounted above a dual-outlet valve, as used in big plants.

DEPENDABLE REFRIGERATION SINCE 1883

FRICK CO.

WAYNESBORO PENNA U.S.A.

yes, I can give you many reasons why we use YORK valves and fittings!

1. First, York offers the industry's most complete line of Freon and Ammonia Valves...from ¼" to 14".
2. I personally know of York valves and fittings that have been in use for 50 years!
3. Many business acquaintances

very low maintenance costs.

7. I recently inspected a popular 1" valve and found flow area less than half pipe area. York valves, on the other hand, have a flow area at all points equal to or greater than the inside diameter of the pipe!
8. You can depend, as we have, on York valves...every York valve is triple inspected and double tested under water, at 300 lbs. pressure, for over-all tightness, seat tightness and sealing ring tightness.
9. Thousands of items are available from stock.

Rely on York Valves and Fittings—check with the nearest York Office or York Authorized Jobber!

IT ALWAYS PAYS TO USE YORK ACCESSORIES AND SUPPLIES

Air Filters • Air Fittings • Automatic Controls • Brine Testing Sets • Can Covers • Can Dumps • Can Fillers • Charging Connections • Coils and Piping • Cold Storage Doors • Freon Refrigerants • Gas Masks • Ice Cans • Maintenance Contracts • Motors • Pumps • Oil • Oil Traps • Purge Devices • Receivers • Renewal Parts • Suction Traps • Spot Service • Valves and Fittings.

accessories and supplies by york

YORK CORPORATION York YORK, PENNSYLVANIA

HEADQUARTERS FOR MECHANICAL COOLING SINCE 1885

PRESS BRIEFS

Radiation of Foods Arouses Opposition

THE journalistic jamboree that has entertained and misled the public with wild predictions for irradiated foods has displeased at least one editorial writer says a recent issue of TRRF Bulletin. The Philadelphia Inquirer for July 24 has an editorial in which the writer first records his boredom as follows: "First, the A-bomb, then the H-bomb. And now the atomic scientists plan to move not only into our kitchens but into our tummies!"

Following a remark or two about the wild possibilities reported in Wall Street Journal for July 19, by Ray Vicker, the Enquirer writer says "There is, however, hope. One professor says radiated hamburger 'smells like a dog when it comes in after a rain'. And scientists admittedly are having trouble licking this trouble of 'smell'. At the risk of being called a reactionary, we suggest that the whole scheme smells. Much worse than any dog of our acquaintance."

Our good friend in Philadelphia may have gone to an opposite extreme but we agree that there is much truth in what he says.

In this connection, with the kind consent of Richard L. Kenyon, Managing Editor of Agricultural and Food Chemistry, we reproduce a letter written to the Editor of that fine Journal by our council member, Harry Kraybill, who is Director, Research and Education of the American Meat Institute Foundation:

"We have noted the article in the May 25, 1954, issue of The Journal of Agriculture & Food Chemistry (page 545) entitled "New Cold Sterilization Research Program to be Conducted by QMC" in which reference is made to work conducted by The American Meat Institute Foundation.

"We are quite concerned with regard to the optimistic implications of your comments on the possibilities for effective cold sterilization of meats. We wish to comment on these implications, therefore, and indicate that the following statements: Meats seem to offer some of the best possibilities for effective cold sterilization or that Radiation may ultimately prove to be one of the best processing methods for meat do not reflect our evaluation of the research conducted on this subject.

"In work conducted thus far, supported in part by the Atomic Energy Commission, very objectionable flavor, odor and color changes have been observed in meat given sterilizing doses. These changes must be overcome and consideration given to safety and cost factors, before commercial sterilization of meat by irradiation becomes a reality.

"We have stated, however, that low level 'pasteurization' dosages are effective in prolonging the shelf life of prepackaged meats kept under refrigeration. At present, this application seems to offer considerably more promise commercially than does the use of sterilization doses."

Plant Installs Blast Freeze Tunnel

THE construction of a blast freeze tunnel, an innovation in that area in the food freezing field has been completed by the Philadelphia Warehousing and Cold Storage Company at its plant and warehouse on Delaware Avenue. John W. Davis, president of the concern, said the blast freeze tunnel will provide fast freezing and preserve flavor and taste at the peak of freshness.

The tunnel is constructed of heavy walls, ceiling and floor and is lined with 12 inches of cork insulation. It contains approximately 6000 cu. ft. of space and can process an average of 100,000 pounds of food daily. A temperature of 45 degrees below zero is maintained within the tunnel and the blast effect comes from a forced draft of four 36-inch fans which create a velocity of 75 miles an hour.

Egg Industry Advisory Committee Opposes Price Support Program

OPPOSITION to price support, surplus purchase, or subsidy programs for eggs was again voiced by the Egg Industry Advisory Committee which met with U. S. Department of Agriculture officials October 8.

The committee, which is composed largely of producers and heads of cooperatives representing widespread grower interest throughout the country, brought up to date and reaffirmed a statement made last April. The text of the statement follows:

"This committee believes in self-help, leaving to the industry the solution of its own problems. It recognizes: (1) That the egg industry has the advantage of relatively short cycles of production-correction; (2) that the primary reason for the 1954 production increases and 1954 price declines are due to the fact that prices received by producers for eggs during 1953 were extremely profitable; and (3) that price is the greatest single factor regulating supply and demand.

"The committee therefore again reaffirms its 1953 recommendation as it did in April, 1954.

"1—The Government should not conduct an egg price support, egg surplus purchase, or an egg subsidy program.

"2—That the USDA can serve the industry best by continuing the intensification of the dissemination of all the facts relating to poultry population and replacements.

"3—That the USDA should continue to lend its aggressive assistance toward the improvement of efficiencies relating to all phases of the industry, especially to distribution."

Merchants Expands Hopkins Plant

A MAJOR expansion of the Merchants Refrigerating Company plant in Hopkins, Minn. has been announced. The project, already begun, will provide a 360-foot long addition to the east end of the one-story building at W. Lake Street and Monk Avenue. It will increase the company's space by 1,350,000 cubic feet and probably cost close to one million dollars. The present plant, built three years ago, contains more than 1,750,000 cubic feet of refrigerated space.

Besides freezer space cooled to 10 degrees below zero, the addition will contain additional sections for tenant rentals, an equipment storage and handling room, expanded engine room and a special area for equipment maintenance. Four blast freezers capable of blast-freezing 200,000 pounds of perishable food a day to 40 degrees below zero will service the existing and new refrigerated areas.

Russia Announces "Largest" Cold Storage

RUSSIA claims to be building Europe's largest cold storage plant in Moscow's Cherkizow district. According to the official newspaper Pravda, the structure will incorporate the most advanced construction methods and technical equipment. The foot-thick exterior panels are said to be remarkable for their exceptionally low heat conductivity and their complete impermeability to moisture. These panels replace the 10-foot thick brick walls used in conventional Russian cold storage plants.

Storage rooms will be located on all seven floors of the new structure, with temperature automatically maintained at from zero to minus 30 degrees Centigrade, as required. The plant will hold "several tens of thousands of tons of food products at one time."

Taylor specializes in taking TEMPERATURES

WHETHER you want to control and record them, simply record them, or just have a clear, accurate indication of what they are, there's a Taylor instrument that will do the job superlatively well. Help you cut costs; give you new efficiency. Here are just a few of the wide selection. A postcard will bring you *Catalog 300*, with detailed information, or call your Taylor Field Engineer. Taylor Instrument Companies, Rochester, N. Y., and Toronto, Canada. *Instruments for indicating, recording and controlling temperature, pressure, flow, liquid level, speed, density, load and humidity.*

TAYLOR FULSCOPE* CONTROLLER

For *tanks, brine lines, compressors*, etc. Probably the most versatile instrument made for temperature, pressure, flow and liquid level control. Easily adaptable to any operating conditions.

TAYLOR RECORDING THERMOMETER

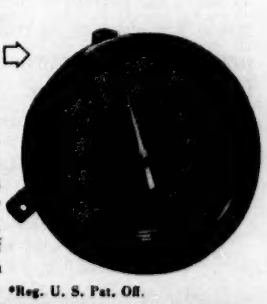
For *brine tanks, brine and ammonia lines, bunker rooms*, or any process in refrigeration where temperature record is required. Available to record in one, two or three different temperatures.

TAYLOR INDUSTRIAL THERMOMETER

For installation in insulated lines. Sturdy, one-piece, shallow case for wide angle of vision. Triple lens BINOC* tubing and bold, contrasting scale make this the easiest to read of all industrial thermometers. Straight or 90 angle stems. Many other types, ranges and angles.

NEW 6" DIAL INDICATOR

For temperature or pressure applications, where periodic reference only is required. Mercury, gas, organic liquid or vapor actuation, as desired. Variety of ranges. All new movement minimizes linkage error—gives greater accuracy throughout span. Fume and moisture proof case can be face or flush mounted.



*Reg. U. S. Pat. Off.

Taylor Instruments
MEAN ACCURACY FIRST

In planning or estimating cold storage insulation . . . note how this

OVER 90% of cold storage facilities at the busy Georgia State Market at Atlanta, including approximately 64 cold storage rooms constructed over the past 12 years, are insulated with Palco Wool. This provides 270,000 cu. ft. of refrigerated space for storage of tomatoes, bananas, shortening, potatoes, strawberries, and other produce, fruits and vegetables.

Palco Wool Insulation is recognized by refrigeration engineers as having an exclusive combination of advantages ideal for cold storage, including high sustained insulating efficiency, moisture resistance, freedom from odor, permanent non-settling resilience, resistance to all forms of deterioration, rodent and insect repellence—plus low cost and easy installation. For every cold storage requirement, investigate Palco Wool Insulation.

Write today for your free copy of Cold Storage Manual and free samples of Palco Wool and Palco Board Insulation

PALCO WOOL INSULATION
has high efficiency of .26 B.t.u., ideal for all loose fill applications.

PALCO BOARD INSULATION
offers low thermal conductivity of .30, with high structural and compressive strength. 1", 2" or 3" thickness, 12"x36", 18"x36", 24"x48" and special sizes to 48"x72".

PALCO INSULATION WOOL®

THE PACIFIC LUMBER COMPANY

100 BUSH STREET, SAN FRANCISCO, CALIFORNIA
35 EAST WACKER DRIVE, CHICAGO, ILLINOIS

PALCO INSULATION BOARD®

In the Spotlight

PRECO ICE machines are now being used by Pacific Fruit Express and other car icing agencies to speed up icing of refrigerator cars. These machines reduce icing costs and expedite the icing operation, sending ever increasing volumes of perishable foods from the West Coast to eastern markets. A typical car-icing operation at the Loma Linda yard of Southern Pacific near Colton, Calif. is described in the article on page 19.

A REFRIGERATED barge has been constructed for The Transportation Research and Development Command for use by the Army in transporting and storing food supplies. This first unit will serve as a prototype for construction of additional barges. Complete description is given in the article starting on page 21.

THE STORY of ice, presented on a TV program in Los Angles, had as its setting the Union Ice Company plant of that city. With the aid of a commentator, the ice making process was described, followed by scenes depicting the various purposes for which ice is used industrially and domestically. This dramatic ice-publicity story is told in the article on page 16.

AN UNDERGROUND refrigerated storage warehouse has been opened near Kansas City in a limestone ridge, chiefly for intransit storage of frozen foods. Refrigeration machinery and insulation has been installed to maintain the low temperatures required for frozen foods. Sixteen low-temperature storage rooms provide the initial operation. For descriptive details and pictures, see article on page 17.

FROST HEAVING of freezer room ground floors is an increasing problem because of the trend toward utilizing ground floor rooms for freezers. The immediate cause, freezing of the ground under the floors is being attacked by engineers and research organizations. The article on page 13 will be of special interest because it deals with correcting a situation which already exists.

MORE THAN 500 tons of ice was used to provide "snow" for a ski slide at Soldiers Field, Chicago, September 17 - 19. The largest man-made ski slide ever built, 17 stories high, specially constructed for the event, it towered high above the stands of Soldiers Field. For icing details and pictures see page 24.

AIR CONDITIONING equipment recently installed in the Wachovia Bank and Trust Company, Winston-Salem, N. C. made it possible to add 29 percent to available floor space in the 44-year old building. For details see article on page 26.

THE ANNUAL ICE convention will be held at The Netherlands Plaza Hotel, Cincinnati, November 9-12. Featured speakers, "How to do it" sessions, reports of officers, and unusual entertainment will be the background of what is expected to be the Ice Industry's Biggest and Best Convention. For program details see article starting on page 29.

AN ALL-OUT sales promotion campaign to popularize ice for household use, in food stores, and in restaurants and hotel dining rooms has been started by The Canadian Ice Foundation. For details see page 30.

A COLD WEATHER Hangar established at Eglin Air Force Base near Pensacola, Fla. has been made available for testing engines and automotive equipment being made for the armed services. Two Cadillac army tanks were given the sub-zero treatment, as told in article on page 27.

THE ANNUAL Meeting of the American Society of Refrigerating Engineers to be held at Philadelphia, November 28-December 1 will feature a series of informal conferences and forums. An outline of the program and entertainment is given in the pre-convention announcement on page 31.

APPARENT satisfactory performance of an old pump may be hiding real costs of operation which could represent the price of a modern pump, according to a pump manufacturer. Gradually decreasing efficiency and increased power costs, are two important factors which may show up the old pump to disadvantage. This subject, important to operating refrigerating engineers, is discussed in the article on page 33.

THE 45TH ANNUAL Convention of the National Association of Practical Refrigerating Engineers held at New Orleans, La. November 2-4 presented a diversified program of talks and discussions on engineering subjects. New enterprises and new services, it was pointed out, are beckoning for the services of refrigeration engineers. Preliminary report of the meeting starts on page 44.

INDUSTRIAL Research is concerned with creation of new understandings, new principles, new products, and new services. To these ends about 2 billion dollars is spent yearly, utilizing roughly one-fourth of all our engineering and scientific manpower.

keep your coolers f

prevent freeze-up with

LCO

EVAPORATOR
PRESSURE
REGULATORS

They hold evaporator pressures to a predetermined point when the load changes. Available for any size water cooler—from drinking fountains to large industrial installations.

ENGINEERED
for service
for life

SEE YOUR ALCO WHOLESALER

ALCO

Designers and Manufacturers of Thermostatic Expansion Valves; Evaporator Pressure Regulators; Solenoid Valves; Float Valves; Float Switches.

ALCO VALVE CO.

How to Correct
Frost Heaving of Freezer Room Floors

A. W. RUPP
V. C. Patterson & Associates
York, Pa.

The increasing trend toward utilizing rooms on the ground floor for low temperature freezer storage has resulted more and more in floor heaving and buckling, caused by freezing of the ground under the floor. Indicating the importance of the subject, a number of engineers have directed their attention toward it, a number of research projects are under way to ascertain the cause and remedies, and INDUSTRIAL REFRIGERATION has published a number of articles on it. This article will be of special interest because it deals with correcting a situation already existing.

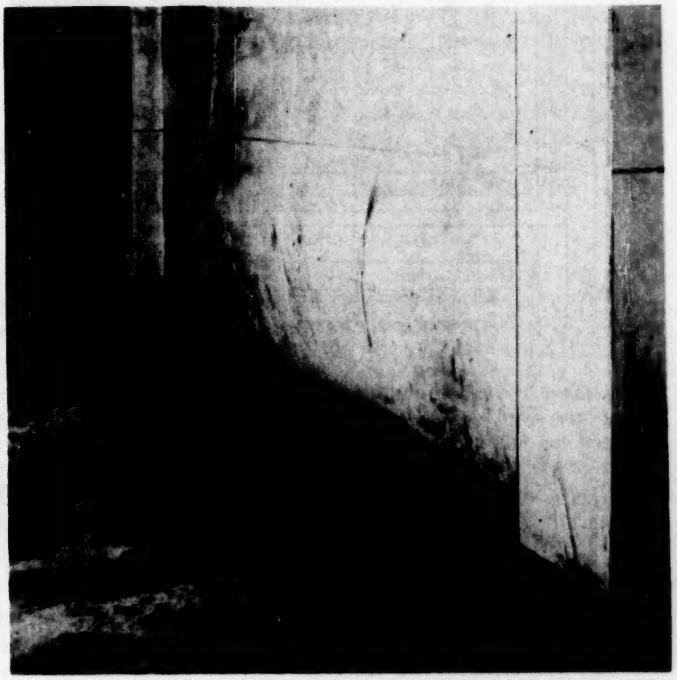


Fig. 1—Buckled floor and wall in ground floor freezer room—Photo by Armstrong Cork Company.

THE increased demand for food freezing and freezer storage has influenced the construction of locker plants, food freezing plants, and freezer storages in all parts of the country. During the past few years especially many new freezers have been constructed and many cooler rooms have been converted to freezers. Where these are built on the ground floor without special precautions to prevent under-floor freezing, floor-heaving difficulties are apt to occur.

The cause of this floor heavage is usually the cumulative effect of ice pockets under the insulated floors growing and expanding in the earth as it is chilled below the freezing zone. This action creates pressures which erupt the floor above, lift building support columns and thus progressively destroy the building. This action is shown in Fig. 1 which illustrates a floor buckled and also a bowed effect on the free standing insulated wall. Figs. 2 and 3 show how the ice forms in the earth or fill below the insulated floor. Usually it requires many months and sometimes years at room temperature of 0 to − 5 F before this destructive force is noted. Even then it moves slowly; however, it is only a matter of time until the building will be badly damaged.

There are probably no well defined theories as to why this occurs in some soils and circumstances and not in others. However, it is known that clays as well as high water levels are apt to cause difficulty. In the northern climates the condition is more severe than in the south where soil

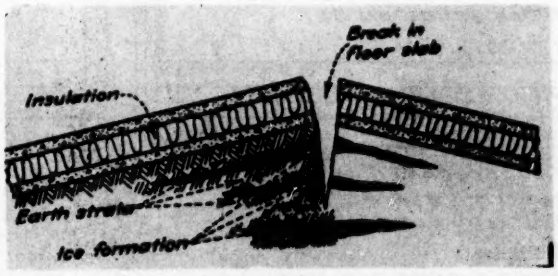


Fig. 2—The usual design of freezer room floor consists of two concrete slabs separated by a thick layer of insulation.

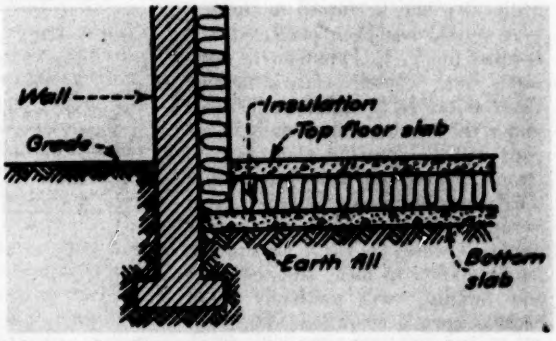
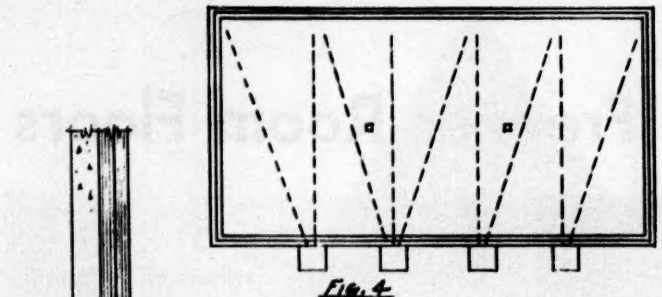


Fig. 3—Freezing temperature in the ground causes ice to form and as it expands to exert an upward force on the floor, causing heaving or buckling.



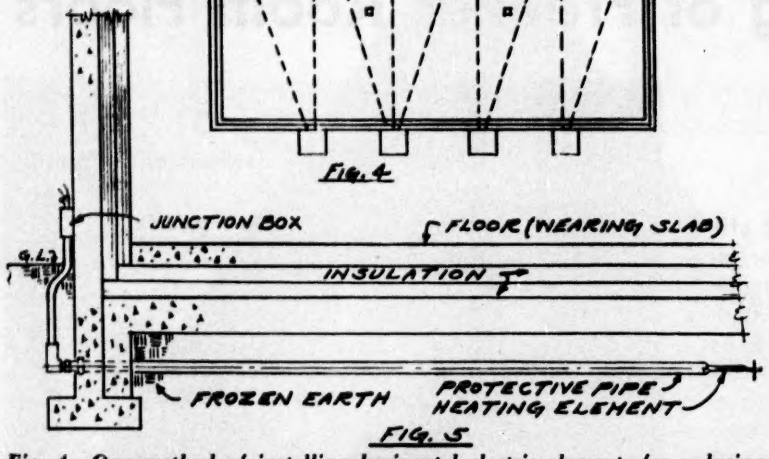


Fig. 4—One method of installing horizontal electric elements for reducing floor heave. Fig. 5—Details of Fig. 4, showing probe, piping, wiring details of this practice.

temperatures are normally above freezing.

Keep Underground Below Freezing

The positive way to prevent soil freezing beneath a freezer room floor is to add heat artificially in order to keep the supporting fill or earth at a temperature above 32 F. This is normally accomplished on new constructions by building pipe grids for warm fluid circulation or by laying in air tile or ducts.

However, where difficulties occur on buildings already constructed, the cost of putting the room out of service, tearing up the floor, and reconstructing it with a warming system is extremely expensive or impossible from a business operating standpoint. A locker plant, for instance, must render continued service to its patrons; unless troubles can be corrected during normal activity, the business would be forced to close.

A system has been perfected and applied by V. C. Patterson & Associates, Inc., whereby electric heating elements can be permanently installed under the insulated floor slab in accord with engineering plans and instructions without interfering with the freezer room use. When current is applied, these heating elements gradually warm the earth, causing the ice formation to melt, and the floor and building will gradually settle back to normal conditions. The electric current can then be reduced to a point where it will just prevent refreezing.

The following basic methods have been perfected for installing the heating units:

Basic Methods

1. Pushing pipes horizontally under the floor and into which heater elements are inserted (Fig. 4 and 5).

2. Inserting pipes vertically down through the floor slab and placing heating elements at the proper level in these pipes (Fig. 6 and 7).

Of the two basic methods, the latter is used only where the location of the building makes the first method impracticable or uneconomical. When this plan is used some interference with freezer space occurs and stored items may have to be shifted. Dust and dirt created by the drilling may be a problem; however, vacuum pumps and isolation can usually eliminate this objection.

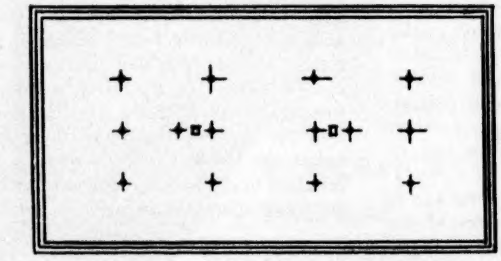
Installation of the first method is custom-designed for each application because of the many variable factors involved. Inserting the pipes can be difficult if the proper methods, depending on the type of soil or fill, are not applied. At times a hydraulic jack backed up with cribbing can be used. Sometimes a water lance located inside the pipe is the best solution, or drilling may have to be used at certain locations. In any event by using the proper engineered methods the heating elements can be inserted with a minimum amount of time and expense.

The selection of heating units, in respect to arrangement and capacity, is usually engineered to lower the floor in about three months. However, in the case of a small ice cream hardening room; a high heat concentration was applied and the floor lowered in less than three weeks.

Typical Jobs

A tabulation of typical jobs which have been corrected is on next page.

The economic considerations are of interest. Let us compare the cost of replacing a freezer floor 100 x 60 ft. against the cost of using the patented methods outlined above.



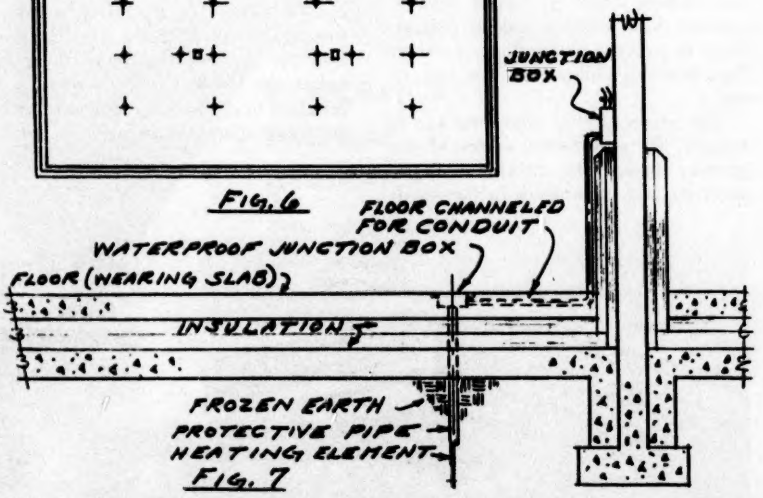


Fig. 6—Floor plan for vertical method of electric element insertion in frozen floors. Fig. 7—Working instructions for installing vertical elements. Applications described have been patented by the author.

TABLE I — TYPICAL FLOOR BEARING JOBS CORRECTED

Job	Type	Room Size Sq. Ft.	Heat Applied Watts	Total KWH	Time to Lower
A	Food Locker	470	1,600	2,304	60 days
B	Food Locker	7,800	25,200	33,264	55 days
C	Dairy Freezer	6,600	30,400	54,720 (est.)	75 days (est.)
D	Frozen Food Plant	3,600	10,400	18,720	75 days
E	Food Locker	1,200	4,200	7,560	75 days
F	Frozen Food Plant	1,200	3,200	6,528	85 days

To remove the buckled floor and reconstruct it would cost about $5.00 per sq. ft.

This would be an investment cost of $5.00 x 100 x 60 ft. = $30,000.00 or an annual carrying charge of 10 percent, or $3,000.00.

By installing the patented method and using 20 kw of heat during a three month period, we would incur the following expense:

Construction Cost $8,000.00
Power Cost (20kw x $.025 x 90 days x 24) 1,080.00
Total $9,080.00
Carrying charge on this cost at 10 percent .... $ 908.00
Cost of current to hold (3 kw x .025 x 24 x 365) 657.00
$1,565.00

This shows an advantage in annual savings of $1435.00, or nearly half of the resultant cost of replacing the floor. In addition to this appreciable savings, the freezer can be operated continually at full capacity with no loss of revenue.

With the case of a smaller locker room or storage, the cost analysis, as outlined above, would show a cost comparatively less.

If floor buckling is started in a plant, it is extremely important to start correction immediately before serious damage takes place.

Atomic Uses and Other New Engineering Ideas Feature Power Show

WITH a salute to the atomic age, the 21st National Exposition of Power and Mechanical Engineering will parade a greater variety of new developments than ever, from the first marketable reactor to the latest in "brains" for the robotized manufacturing plant. The Exposition will be held for the first time at Philadelphia's Commercial Museum, instead of in New York as heretofore, and again it will be under the auspices of The American Society of Mechanical Engineers. The dates, December 2 to 7, inclusive excepting Sunday, are both concurrent and following the annual New York meeting of the Society.

More engineering and manufacturing companies are already at work on peacetime uses of atomic fission than is generally known, and more concerns are exploring its possibilities, notably in the field for tools to implement the new art. Massive results may not reach the consumer level for some time, but reactor engineering and the problems of heat transfer from supertemperatures down to customary degrees of heat are being studied in many quarters.

In view of this status, it is fair to expect that one of the headline exhibits at the Power Show will be one disclosing for the first time a unitized design for research reactors. This systematic project will provide the tooling for research and production groups which are at present digging at the very roots of reactor engineering. The concept underlying the exhibit is similar in principle to the application of interchangeable packaged units in machine tooling.

Automatic Communications

Another feature of interest to visitors will be the numerous exhibits revealing advances in automation, ranging from the automation regulation of a single mechanical operation to the "masterminding" of an entire power generating station.

One of the established leaders in automatic controls will offer for the first time an all-electronic load and frequency control system that is new from telemetering units to turbine. This system employs continuous pulse-rate telemetering to insure sensitivity and accurate readings, and may be installed with any form of transmission, such as wire, controlled carrier, or microwave.

Television for industrial application has made possible observations of events in power and processing plants that were once beyond the range of human vision, events occurring in remote or hazardous locations, particularly. By the aid of a 5-in. monitor of compact design, one exhibitor will demonstrate how a power plant supervisor, from a convenient location can observe combustion, smoke, and water level in the boiler drums, or see pictures of gage dials or recording instruments.

Steam Equipment

Steam equipment, from boilers to mainline distribution, dominates the show from the standpoint of number of displays, and multiplicity of products. It includes everything for the power plant; from fuel handling equipment, through furnaces, insulation, air movement for combustion, and removal of waste gases, soot and ashes; to all kinds of major and incidental equipment on the water side; finally, steam handling with piping, valves and controls, to cover every known objective and accident of power plant design.

In the field of power plant auxiliaries, an exhibitor of boiler feed and condensate return systems will display a line of boiler feed pumps, mechanically sealed, and said to be capable of running dry for as much as two hours, "without burning up." Another display will feature "the largest (steam) traps built," in addition to pressure reducing valves capable of cutting down pressures as high as 600 psig to ounces, in a single valve.

New Cold Storage Plant for Pakistan

THE SIND Government of Pakistan is considering the establishment of a huge cold storage plant at Hyderbad Sind for storing fish, fruits, vegetables as well as seed potatoes. The plan has been sanctioned by the Development Board of the Province.

Ice Cream in Greenland

A DISH of ice cream may now be bought in Godthaab, capital city of Greenland. The first ice cream parlor in the city was opened with equipment imported from Denmark. Brisk sales were reported, with many residents lining up to sample the product.

The Ice Story Is Featured on TELEVISION

Television cameras were set up in the Union Ice plant in Los Angeles to tell the ice making story. Photo at right shows camera focused on one of the machines in the plant while commentator tells audience how it works.

THE story of the Union Ice Company of California was featured on the "Success Story" program over television station KTTV, Los Angeles, California on the evening of September 3 from 7:00 to 7:30 o'clock.

The Union Ice Company story was one of a series of on-the-spot telecasts presented over KTTV each week under the sponsorship of the Richfield Oil Corp., with a different industry covered each week.

The program was a "live" show photographed with the cameras moving through the various ice making, machinery and cold storage rooms of the Union Ice Company's southern division main plant at 1525 Industrial Street, Los Angeles.

Story of Ice

Presented to the TV viewers was the complete story of the manufacture of ice, supplemented by set scenes depicting the various purposes for which ice is used industrially and domestically. The various props, such as card signs and pictures to illustrate the uses of ice, as well as lift fork trucks and the like required during the filming in the plant, were supplied by the Union Ice Company.

The introduction and general narration were handled by Announcer John Milton Kennedy, with master-of-ceremonies Kenneth Peters doing the descriptive commentary as the cameras moved along to focus on the ice making processes and plant machinery.

Supplementing the commentary were short technical talks by members of the Union Ice Company's executive staff. Ed L. Nelson, southern division manager of plants, talked on water purification and the function of compressors. R. L. Maples, assistant to Nelson, discussed "The Making of Ice." F. E. Drayer, Los Angeles branch manager, talked on "Ice Processing." P. W. Easton, vice-president and R. A. Parker, southern division general manager, discussed the expansion the firm has undergone since its founding, the scope of its present activities in ice production and distribution, freezer storage and hydro-cooling.

Some of the information presented by company personnel was in the form of brief talks while the camera was trained on the subject under discussion—such as Nelson on compressors; and other points brought out in the form of questions addressed by the narrator to Mr. Easton or Mr. Parker.

History of Ice

The program opened with the narration of the history of ice making in California by announcer Kennedy. He reviewed the story of the Union Ice Company from its founding in 1882. Touching on the history of ice in California, Kennedy told how the first supply of commercial ice arrived in a sailing vessel that had traveled around Cape Horn from Boston.

"Only a small portion of the cargo survived the long trip," Kennedy told the television audience, "but it marked the official beginning of California's ice business. Next, ice was shipped in from Alaska. The first shipment, 250 tons, sold like the proverbial hot cakes. In 1867, when the Central Pacific Railroad established contact with the lakes in the High Sierra's, California's first native ice was harvested and stored for shipment under sawdust in the building shown in this rare photograph taken at Boca, near the California-Nevada border. (a picture of the old ice storage building was flashed on the screen). It was rugged, sometimes precarious business, employing mule drawn saws across frozen lake surfaces. From these rudimentary beginnings has grown an industry that is felt in all walks of daily life.

Emcee Peters took over at this point to handle the descriptive comment as the camera moved from department to department in the ice plant. The first scene showed Peters, wearing boots like an ice house worker, standing beside a series of large compressors. Ed Nelson's remarks on the purpose of compressors and the value of water purifying were elicited at this point through a series of questions by Peters.

From the machinery room the camera proceeded into the ice making rooms, showing the crane with a load of filled tanks, how the tanks are set in the floor and other details of production and operation. Union Ice Company's R. L. Maple handled the commentary on ice making for these scenes.

Scenes of Plant Operation

Scenes of ice plant operation that followed included the removal of blocks from the cans, refilling of the cans, notching saws, removal to storage room and piling of the ice blocks.

Scenes photographed to show the multiplicity of purposes for which ice is used included the following:

Refrigerated truck backing up to Union Ice Company loading dock; pushing 320 pound ice blocks into crusher for making snow ice; conveyor spraying snow ice over perishable load in truck; view of mobile unit used by Union Ice Company to carry ice to trucks and railroad cars away from its plant; cubing machines, incidental to which a review of the use of ice cubes was presented; and scenes showing how ice sculpture is produced and various

(Continued on page 49)

Underground Refrigerated Storage to Provide Freezer Space for Frozen Foods

THE natural advantages of an underground refrigerator, a nine-acre quarry in which the temperature remains an unvarying 55 F will be utilized when the Inland Cold Storage company opens for business in November.

Electricity to start the five Frick second stage compressors, and the three Fuller boosters was turned on about the middle of October, and the president of the company, Leonand Strauss, said it would take about a month to properly cool down the plant. The Kansas City Power & Light Company is installing extra power lines and transformers to serve the installation.

The site is three miles west of Kansas City, in a limestone ridge that rises from the Kaw river valley to a height of 200 feet, adjacent to the main line of the Santa Fe railroad.

Front view showing entrance of railroad spur to Inland Cold Storage plant.

Designed For Freezer

This project will differ from the Natural Storage company's operation developed about two years ago in a rock mine at Loring, Kans., chiefly in that it is designed primarily as a freezer rather than for cold storage at the normal 55-degree underground temperature. The cave operation at Loring, on the Union Pacific railroad, now has about 1,500 carloads of merchandise. Freezer capacity developed there since the opening will accommodate 150 to 200 carloads.

The Inland company was organized last October and purchased about nine acres in the Thompson-Strauss Quarries, Inc., cavern for the new project. Mr. Strauss is president of both corporations. Other officers of Inland are J. E. Press, vice-president, and A. E. Margolin, secy.-treas.

To take advantage of the natural benefits of a moderate constant temperature, the company has installed a spur line 1,000 feet back into the quarry and sixteen concrete block storage rooms. Most of the rooms will be chilled to a temperature of minus 10 F and the remainder to around 38 F.

To prevent formation of excessive frost on the brine lines of the refrigeration system, merchandise will not be taken directly from the cars into the minus 10 F freezers. Instead, it will pass from the 55 F cavern temperature into an intermediate room, where temperatures will be held at 30 F, and from there go into the sub-zero room.

Frozen Food Storage

The object of all this, specifically, is the storage of frozen food products. Essentially, it will be an in-transit warehouse. What they propose to do, according to Mr. Strauss, is to take the overflow production at harvest time and store it on an in-transit basis until firm markets develop in localities where no backhaul is involved.

Roof Reinforced

When the project was first conceived some engineers raised a question they themselves could not answer. They said the roof of the cavern was safe in its 20-foot square limestone support pillars dotting the area and spaced fifty feet apart. But they could not calculate the safety factor if the temperatures in there were reduced to below zero. Then someone pointed to a technique developed in recent years in Alabama iron mines.

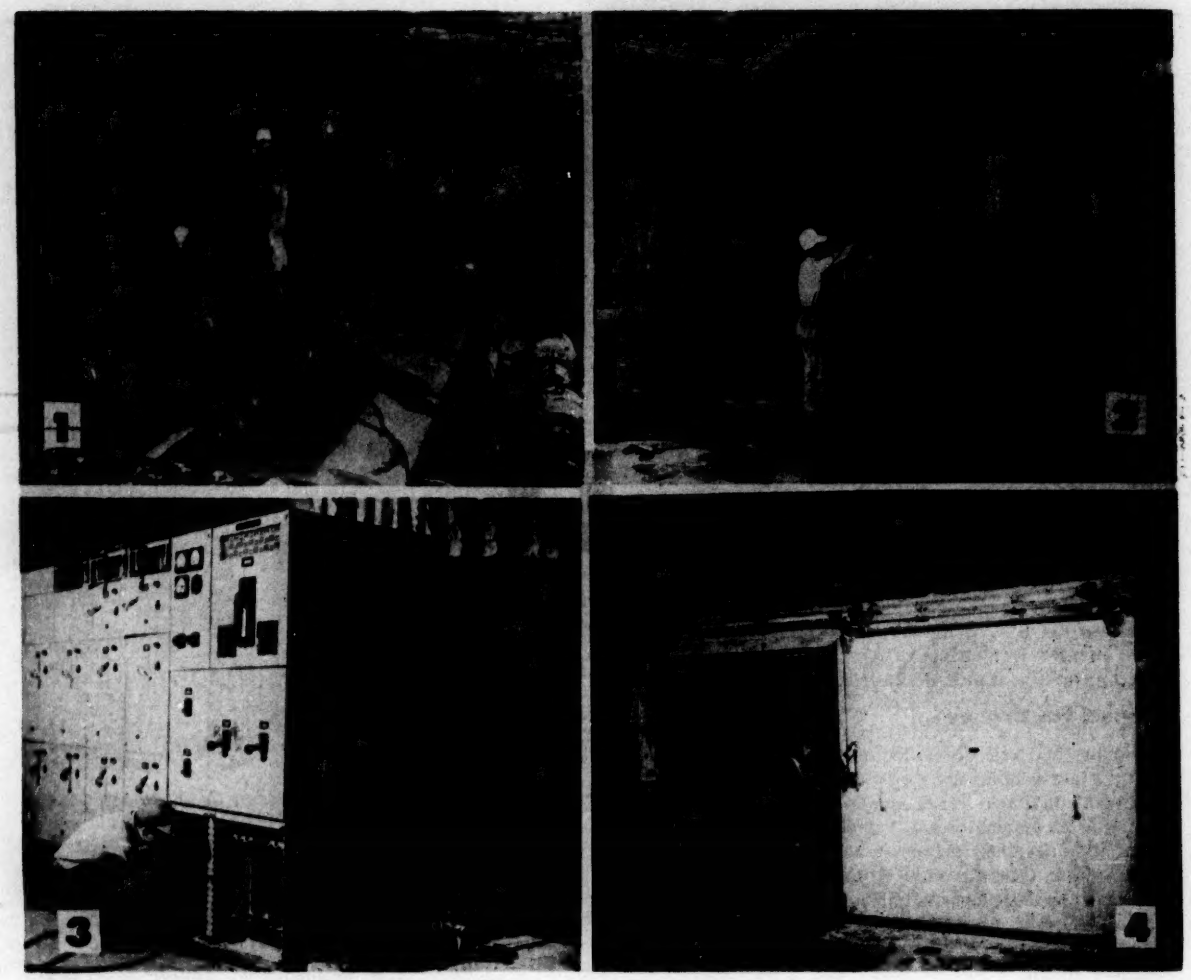
Following the Alabama iron mine roof bracing procedure, the company drilled holes into the roof area over the cavern acreage in a 4-foot spacing pattern. Then 14-foot lengths of high tensile strength, 1-inch diameter steel rods were driven into the holes with pneumatic drills. The upper ends of the rods were slotted and steel wedges were placed in the slots. When the rods were driven into solid stone at the end of the drilled holes, the wedge spread the slotted rod end, acting like a toggle and anchoring it permanently. Square steel plates were bolted to the inside ends of the rods and tightened against the under side of the stone ledge roof.

The first sixteen rooms, which flank the spur line on either side, represent an investment of $1,500,000. They provide over 3,000,000 cubic feet of storage space. Eventually the total investment is expected to reach $4,000,000 and the storage space, 6,000,000 square feet.

Refrigeration System

A 590-ton refrigeration system of the ammonia-brine type has been installed to provide lowered temperatures for the big underground freezer which will hold some $25,000,000 worth of frozen foods.

The refrigeration plant will be expanded as more storage area is made available. Additional refrigeration was not necessary at the present time because the temperature differential is less than required for conventional frozen food warehousing. The stable 55 degree temperature is lowered to minus 10 degrees as against lowering from 100 degrees, the standard practice for assuring desired freez-



Interior view of Inland Cold Storage plant. 1—Engine room showing refrigeration installation. Mechanics making up final piping connections on five belt driven-cylinder type compressors. 2—Two air units have been hooked together for the initial pull-down of temperature of minus 10 F. The front unit will be disconnected and removed to another room later. 3—Workman making connections at panel board which supplies power for various pumps. 4—Sliding door opens into freezer room.

ing temperatures in this part of the country.

Generally, construction costs were 40 percent less than reproduction of the same building area above ground. The one floor operation will result in higher efficiency and required a lower capital investment.

The walls were insulated with Foamglas six inches thick and double coursed. Once the plant is cooled down a complete refrigeration failure would mean the loss of only two or three degrees of temperature for as long as two weeks before repair.

By the end of November the first shipment of frozen foods will have arrived. Because of natural insulation on the roof, and 5-inch concrete slab floor, it will take about thirty days to lower temperatures to the desired degree.

In the language of the quarry trade, the new warehouse has 175 feet of "overburden," meaning that's the distance from the roof to the surface. As a measure of insulation, engineers figure that a foot of rock has the same insulating capacity as a one-inch thickness of commercial insulation material, such as rock wool. In comparison to the five-inch thickness that is the usual amount of insulating material used in "above-ground" warehouses, the capacity of the new plant for retaining cold becomes one of its biggest advantages.

There are two essentials necessary to succeed in this type of operation, Mr. Strauss believes: proximity to a railroad line and proximity to a major transportation center. (The underground warehouse will have a dock to accommodate 15 trucks, besides the spur line which can handle 18 refrigerator cars.)

Quarry Continues Operation

The freezer warehouse will not interfere with continued operation of the quarry, which produced about 1¼ million tons of crushed rock sold by Thompson-Strauss last year. That production increased the size of the cavern about fourteen acres. There is a total of 450 acres in the quarry property and additional space inside the cavern will be deeded to the Inland company whenever it is needed for expansion.

The Santa Fe railroad has purchased sixty acres of Kaw River Valley land adjoining the four entrances to the cavern for the purpose of serving the subterranean warehouse and development of an industrial district, with emphasis on food processing. That property was obtained from Wheaton College near Chicago.

Automatic Car Icer Cuts Time Required For Servicing Refrigerator Cars

The Preco car icer, an automatic car icing machine, has created another vast stride forward for the car icing industry. With this machine, empty cars can be serviced at the rate of about one a minute, including, in some cases, a 10,000 pound reefer.

An allover view of mechanical icing machine in operation at the Kansas City yard of Union Pacific.

ICING of refrigerator cars has taken another step forward through the development of a new light-weight, mechanical car icing machine. It is engineered for use on existing icing platforms. The machine has been developed by Preco, Inc., (Pacific Railway Equipment Co.) Los Angeles. Nine units have already been delivered to Pacific Fruit Express Company. Other machines are scheduled for T.P. & W. of Peoria, Ill. and for Fruit Growers Express Company, Washington, D. C.

This new icer promises to materially reduce icing costs. One machine can initially ice a car in approximately one minute, it is claimed. The operation starts with the machine picking up ice cakes from the deck chain, breaking up the ice into desired size and delivering it to both car hatches, simultaneously.

Among its features, the Preco Icer can provide coarse, chunk, or crushed ice. It has sufficient ice storage to permit continuous operation while the machine is moving from one car to another. Floodlights illuminate the working area. Electric power for the machine's operation is picked up from a trolley system either run overhead or under the deck. Weight of the unit is approxi-

Ice destined for refrigerator cars at the Pacific Fruit Express platform in Union Pacific Railroad's new Kansas City, Kan., yard moves by conveyor across a bridge from the unloading track.

In the elevated foreman's office, which affords a long view of PFE's 200-car capacity platform at Kansas City, Agent J. L. Chance uses radio to contact the two mechanical icing machines.

Close-up of ice chute of automatic car icer.

mately 13,800 pounds with ice and operator.

Loma Linda Operation

This system, installed by Pacific Fruit Express Company at the Loma Linda yard of Southern Pacific east of Colton, Calif., is speeding ever-greater volumes of perishable foods from Southland ranches and packers safely through the summer heat to eastern markets.

Loma Linda, running day and night, is handling icing and reicing of eastbound perishable trains concentrated at the Colton gateway and moving by Southern Pacific. It also will handle heating of potato shipments during winter months.

Atop new steel and wood scaffolding, stretching more than half a mile, automatic conveyors steadily feed 300-pound cakes of ice into two electrically operated car icing machines. These machines crush the ice with big spikes, send it tumbling out through a hopper, raise it about the refrigerator car by another conveyor belt and blow it through twin gravity chutes simultaneously into two bunker openings on the car roof.

Push Button Controls

One man, seated before a small control board, simply pushes buttons to run this operation. A flick of the finger moves the big machine from car to car, positions the chutes above car bunkers on either side of the deck and controls the size and volume of ice delivered.

At top speed each machine consumes 40 300-pound blocks of ice a minute, maintains 2000 pounds of crushed ice in the hopper at all times. On some runs, it is reported, a 10,000 pound reefer has been iced in 60 seconds.

Handling Bulk Ice

Bulk ice is brought by rail from the Big Pacific Fruit Express storage plant in Colton to the new Loma Linda unloading deck, where the ice blocks are unloaded manually onto conveyors to raise them 20 feet to the icing platform. The unloading deck accommodates 30 cars. Some 45 railroad cars are used to ship ice from the Colton plant to Loma Linda. Each car carries 164 blocks of ice.

The unloading operation is handled by a three-man crew, who remove the ice blocks from the car and load the chain conveyor. These conveyors are powered by a 20 hp motor. Two inclined conveyors feed the icing machines.

The 3300-foot long icing deck accommodates 150 cars — 75 on each side. These new facilities are in addition to the older icing platforms which are being kept in full use at the Colton plant.

L. G. Schroeder is manager of the Colton ice plant and new Loma Linda deck. Work on the deck began last January following regular grading and track laying by Southern Pacific crews in December.

Last year Colton Pacific Fruit Express personnel serviced 1571 trains of perishables originating in Southern California. The Colton ice plant can turn out 500 tons of ice daily and has storage for 27,000 tons. In addition, PFE maintains modern car shops and stores at Colton, department headquarters.

New Icing Docks

Two larger icing docks are being built by Pacific Fruit Express for use of these machines, one at Ogden, Utah and one at Kansas City. The Kansas City plant will have capacity of 220 cars, 110 on each side of the dock, compared to the Loma Linda plant which has a capacity of 150 cars. Three Precos will be placed in service at Kansas City. In addition the company is now engaged in mechanizing the PFE plant at Laramie, Wyoming with similar equipment.

New Kansas City Car Icing Operations

WITH mechanical car-icing machines, radios and a 50 talk-back speaker public address system, the Pacific Fruit Express 200-car capacity dock, major feature of Union Pacific Railroad's new four million dollar freight yard in operation at Kansas City, Kans., comes as close to thumb pressure control as modern science permits.

K. V. Plummer, vice president and general manager for PFE, which is jointly owned by Union Pacific and Southern Pacific Railroads, terms the installation "the nation's most modern all-purpose icing platform."

Platform in Center

From a railroad operating standpoint, an unusual feature of the platform is its location in the middle of the yard flanked on each side by 17 classification tracks rather than the normal layout which places icing facilities to one side.

The center design eliminates much of the tying up of yard track leads by the switching of refrigerator cars to and from an icing platform on one side.

The top deck of the Kansas City platform is 100-car lengths, the lower deck 60 car lengths. O. I. Larsen, assistant general manager, anticipates a repeat of last year's business, which saw the old Kansas City platform bunker ice 30,000 cars and re-top ice 3,000.

A manufactured ice plant and storage room is currently under construction with completion scheduled for this autumn. A city block away from the platform, the plant will have a daily production capacity of 250 tons of ice with storage capacity of 1,000 tons.

The platform also has a locker room with lunch tables and shower. The 45 PFE employes at Kansas City are headed by F. I. Reneau, assistant superintendent; F. H. Selden, District agent, and J. L. Chance, agent.

Predict Rise in Cost of Room Air Conditioners

THE cost of room air conditioners will not be less next year, it was indicated at a meeting of the Room Air-Conditioner Section of the Air-Conditioning and Refrigeration Institute held at the Commodore Hotel in New York September 24. Over 40 manufacturers of room air conditioners were represented at the meeting

Due to cool weather, room air conditioners have been offered at close out prices in some sections of the country, but manufacturers at the meeting indicated that this was purely a seasonable price fluctuation. Contrary to any drop in retail prices next year, the changing requirements of national codes and local ordinances will no doubt require additional manufacturing and component costs. The consensus among manufacturers was that instead of selling prices going down next year, it is quite likely that they will rise.

Refrigerated Barge For The Army

Floating refrigerated storage plant is designed and constructed to meet specifications for the army, to serve as a prototype for future production on a mass basis

C. R. SCHAEFNER, Chief Engineer
F. W. PARDOE, Chief Ventilation, Heating and Refrigeration Engineer
Ingalls Shipbuilding Corp.

THE Transportation Research and Development Command, "Tradcom". U. S. Army, requested The Ingalls Shipbuilding Corporation to design and construct a 210 ft. nonpropelled refrigerated barge. Advised of the basic requirements, it became Ingalls' responsibility to develop detail specifications and plans, and to build the first craft. Additional barges can then be constructed on a mass or quantity production basis.

The overall dimensions of the barge are 211 x 40 ft with a depth of 15 ft. at the amidship sides. There was, in addition to this, a deck house extending upward three decks. This provided living quarters for a complement of three officers and 28 crew members. Power was supplied by three 100 kw diesel-generators and one 60 kw standby sets, all consisting of Buda engines and Marathon generators. This power is used to operate all of the auxiliary equipment, as well as provide illumination and, in some areas, direct heat. Provisions for propulsion were not provided.

Refrigeration Plant

The refrigeration is divided into three systems: ships stores, ice cream plant, and cargo stores. These systems were not interconnected, except for the ship stores and ice cream plant. The ice cream refrigeration system was designed to act as a spare ships system in the event of break down.

The ships stores boxes consist of the compartments shown in Table 1. These provisions were for the use of the barge's officers and crew, and were sized to comply with the nominal requirements for an extended unsupplemented period of 90 days.

One "Freon-12" compressor, Chrysler Airtemp Model 2103-M, was furnished and had a capacity of 1.6 tons at minus 12 F suction and 105 F condensing temperatures. Suction pressure regulator valves by Alco were provided for the vegetable, dairy and thaw rooms. Electric heaters were provided in the vegetable, dairy and thaw rooms for compartment heating during low exterior temperatures. An integral electric heater was used in the meat box for defrosting. However, salt water defrosting was used for the remaining boxes. Normally hot gas would have been considered, but since salt water defrost was required for the cargo boxes, it was decidedly advisable to utilize the existing facilities.

Ice Cream Manufacturing

The ice cream plant was not designed or intended for the use of the ships crew, but for land based troops. An Emory-Thompson ice cream freezer with a capacity of 40 gallons of ice cream per hour, two hardening and storage compartments with a total capacity of 640 gallons and utilizing Dean plates for shelving, (see Fig. 2), and an aging room of 320 gallons using a Marlo diffuser type unit were provided to assure a smooth succulent ice cream. Double the freezing capacity was deemed necessary to permit aging the mix 24 hours prior to freezing. This would permit continuous operation of the plant. Dry storage, with a direct connecting hatch over, permitted easy access to the necessary dry ingredients.

A compressor, Chrysler Airtemp Model 2105-M, of four tons capacity at a minus 15 F suction and 105 F condensing temperature was required for the ice cream system. Again an Alco suction pressure regulator was provided for the aging room. Manual control of the refrigerant for the ice cream freezer, interlocked with the electrical power to assure that the mixer would be rotating whenever refrigeration was available, was felt necessary to prevent adherence of the mixture to the freezing drum. Modern means of washing and steam scouring of all utensils and milk containers, etc. were placed adjacent to the freezer for convenience of the operating crew. A steam heat convector to maintain this work area at a livable temperature of 50 F with a minus 10 F outside temperature was considered desirable.

Cargo Refrigeration

Cargo refrigeration was by far the most extensive refrigeration system aboard this vessel. Dual temperatures of 33 F and 0 F were provided for each of the seven cargo boxes listed. (Table 2 details capacities of the holds).

Cargo areas were designed for loading frozen products at 15 F and cooled to 0 F in 72 hours. These same boxes also were required to accommodate precooled fruit and vegetables loaded at 55 F and cooled to 33 F in 72 hours with one complete fresh air change every three hours. Four compressors, Chrysler Airtemp Model 2110-M, with automatic capacity control in steps of 100, 83, 66, 50, 33 and 16 percent,

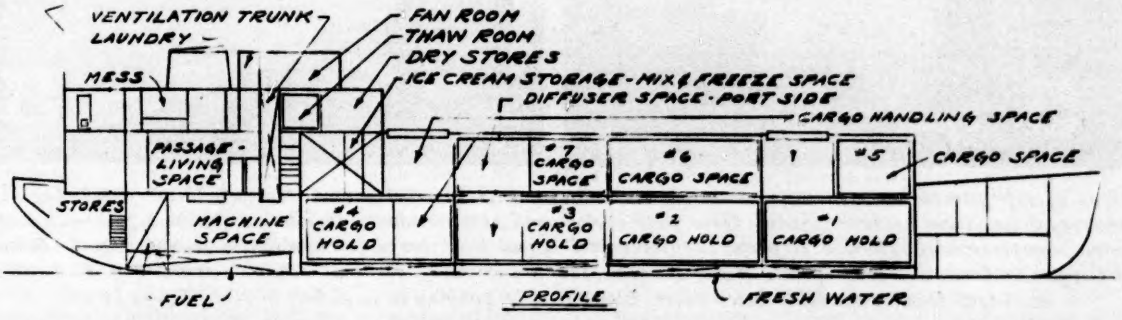
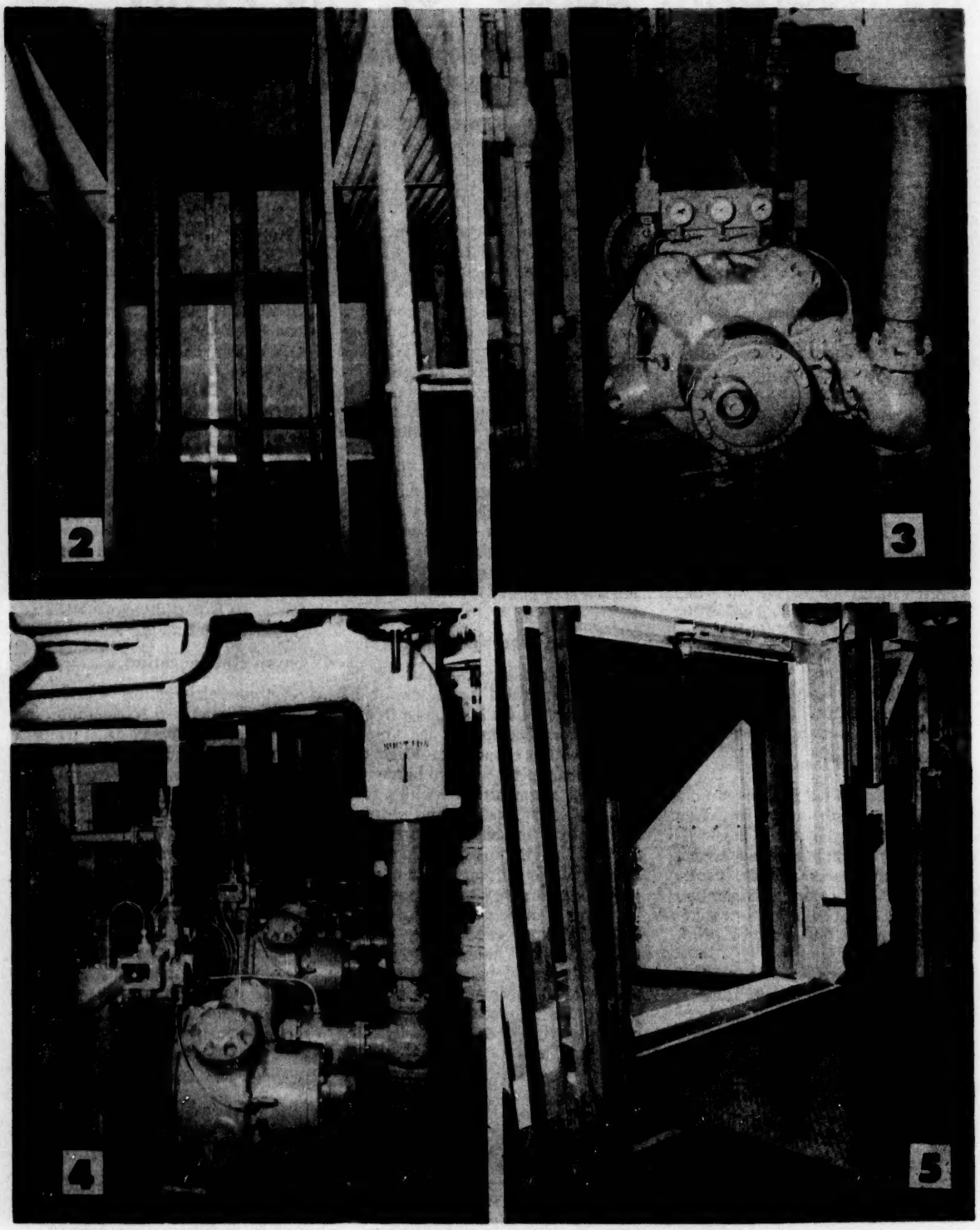


Fig. 1—Longitudinal section through U.S. Army non-propelled refrigerated barge recently put in service.



Views of refrigerated barge built for Transportation Research & Development Command, U. S. Army. Fig. 2—Interior of ice cream hardening room. Note plate shelves and cement-asbestos insulation finish. Fig. 3—Ice cream system compressors. Confection is prepared, stored and issued from barge for land based troops. Fig. 4—Battery of Cargo Compressors. Three operate at any one time, the fourth being for pull down or spare. Fig. 5—Looking starboard from lower level batch cover. Elevator is in position to serve half of No. 7 Cargo Space.

TABLE I CAPACITY AND TEMPERATURE, SHIPS BOXES

Compartment	Vol., Cu. Ft.	Temp., F	Cooling Method
Meat	660	0	Air Cooler
Vegetable	420	40	Air Cooler
Dairy	162	32	Air Cooler
Thaw Room	324	40	Air Cooler

TABLE II — CARGO CAPACITIES, HOLDS AND COMPARTMENTS

Space	Gross Vol. (Cu. Ft.)	Net Vol. (Cu. Ft.)
No. 1 Hold	11,950	8,425
No. 2 Hold	12,100	8,540
No. 3 Hold	12,100	8,540
No. 4 Hold	11,950	8,425
No. 5 Compartment	4,930	3,215
No. 6 Compartment	10,050	6,125
No. 7 Compartment	10,050	6,125

and a full capacity of 10 tons, each at a suction temperature of minus 12 F with a condensing temperature of 105 F, were provided. The load was divided among three of the compressors with the fourth acting as a pull down or standby.

Piping was so arranged that combinations of boxes could be served by its own compressor or the spare. Also, the remaining box or boxes could be served by its own compressor while the standby acted as a pull down for any one box in the same circuit. The Alco back pressure regulators, used to obtain 33 F or above, made it possible to handle both 33 and 0 F boxes with the same compressor. Strip heaters were provided to maintain 33 F or higher when low outside temperatures prevailed. The switch over from cooling to heating was manual, thus simplifying the controls. The cargo system was direct expansion "Freon 12", with Marlo Diffusers and air distribution ducts having both horizontal and down discharge slotted openings. The ducts are located at the ceiling perimeter of each cargo hold.

Defrosting System

The defrosting system is hot sea water heated to 165 F and then recooled to between 90 and 100 F to prevent steaming. The U.S. Public Health Service requires the heating of harbor water to 165 F to kill bacteria. Due to the possibility of this barge being used in contaminated rivers or harbors, it was deemed advisable to comply with this precaution.

The method used to heat and cool the water is somewhat unique on shipboard. A series of four heat exchangers, three for liquid to liquid and the fourth used as a final steam heater, thermostatically controlled, were utilized. The water was taken from the discharge of the heat exchanger used to cool the Diesels.

The Diesels have a closed fresh water cooling system. This sea water cooling medium was discharged at about 80 F. The water then passed through the tubes of a series of heat exchangers. It then passed back through the shells of the water heat exchangers in the reverse order, thus cooling the return water as it heated the water on its way to the final stage. This arrangement may seem elaborate. However, it was done for two purposes: first, for economy, and, second, due to the limited capacity of the two Way-Wolf boilers.

The entire cargo refrigeration equipment was Chrysler Airtemp and /or furnished by Airtemp Construction Corporation, of Dayton, Ohio. Also furnished was a complete alarm and temperature indicating system. The temperature indicators were Brown Instrument 14-point push button selection, with a resistance type dial indicator mounted on a master control board. This permitted the operating engineer to determine each compartment's temperature condition without leaving the machinery area.

The system is so arranged as to be entirely automatic with the exception of the auxiliary heat and defrosting. The usual condensers, receivers, heat exchangers, etc. were provided. Each compressor and its auxiliary equipment was piped and controlled as a separate system. This has been found most practicable to eliminate oil return problems. Oil return becomes of major importance aboard ship due to permanent list or mometary roll and pitch.

Insulation and Finish

The cargo and ships stores, refrigeration boxes were insulated with Fiberglas and lined with "Reeferite". The "Freon-12" suction lines were insulated with cork and vapor sealed. Liquid lines were also insulated if they were located within boxes they did not serve.

The cargo handling equipment was designed for quick handling of frozen cargo direct from refrigerated ships or lighters. Three methods for moving cargo were utilized. The method to be used being determined by the type of cargo, and whether loading or unloading.

An electric-hydraulic one-ton crane mounted on a permanent base and located on the weather deck was provided. This crane was intended primarily for loading loose cargo directly from lighters or ships. The cargo will be lowered in nets to the handling areas below. The second method of loading is by two elevators. These elevators are placed in the two loading hatches, one forward and one aft. When the elevators are not in use, they will be stored in the lowered position thus permitting the use of the crane.

An electrically driven fork lift will handle boxed products on pallets. The products will remain on the pallets for easy removal by the fork lift. The third method of cargo handling was intended primarily for unloading of small quantities. This will be accomplished by Harnischfeger one-ton monorail hoists. Large cargo doors were provided in both the port and starboard sides of the barge. The mono-rails could be extended so as to enable the hoists to lower cargo into small boats tied alongside of the refrigerated barge.

The design and construction of such a barge presented numerous problems. However, yard personnel, vendors and contractors surmounted them and delivered on time a satisfactory floating refrigeration storage plant that met with the rigid inspection and test requirements of The Transportation Research and Development Command.

Nobody Wins A Strike

AFTER studying the "sad facts of arithmetic" the negotiating committee in the recent strike of union pipefitters in the air conditioning industry at Cincinnati contended that "nobody wins a strike". The committee, in analyzing the figures involved, learned that each man lost more than $250 in the strike, which began June 1.

Actual salary lost by each man was $120 a week for a minimum of three weeks, totaling $360, the committee stated; in addition, many of the men would have received many more dollars in overtime in the busy June season, the committee pointed out.

They gained a 15-cent hourly increase by settling the strike, raising the pay from $3.10 to $3.25. Employer's had offered a 10 cent increase for an hourly rate of $3.20 before the strike was called. Workers had demanded a 30-cent increase for a base hourly pay of $3.40.

Since employers had offered the 10-cent raise and the strike was settled on a 15-cent basis, workers gained only five cents an hour, the committee declared. Figuring this gain at $2.00 for a 40-hour week or $96 for the 48-week period of the new contract, the committee pointed out that the $96.00 was small return for the next 11 months in comparison with the minimum loss of $360 in salary by each man during the strike.

536 Tons of Snow Ice Used to Build Summer Ski Slide In Chicago

It was a hot day in Chicago, and three ice crusher slingers put on over 500 tons of snow to prepare and maintain the ski slope for jumping.

MORE than 500 tons of ice was used for the 184-foot ski slide at Soldiers Field Chicago, when three public performances were presented under auspices of the Norge Ski Club September 17, 18, and 19. The largest manmade ski slide ever built, 17 stories high, it towered over the stands of Soldiers Field. The framework, specially constructed for the event, contained nearly twelve miles of steel tubing and more than 10,000 square feet of lumber was used for surfacing the slide.

The ice, 536 tons, was furnished by the Jefferson Ice Company; 220 tons for the first application and 158 tons each for the second and third meet.

The "snow ice" was sprayed on the slide by three Link-Belt ice crusher slingers.

Ice Crushing Equipment

Two truck-mounted Series 200 units prepared the snow for the bottom of the slide. One brand new model 530 gasoline engine portable unit blew up a snow storm at the top of the slope. This unit was able to spread the snow made from six 400 pound cakes of ice in about 90 seconds. The capacity was limited only by the time required by a crane to lift the ice to this area atop the east colonade of Soldiers Field.

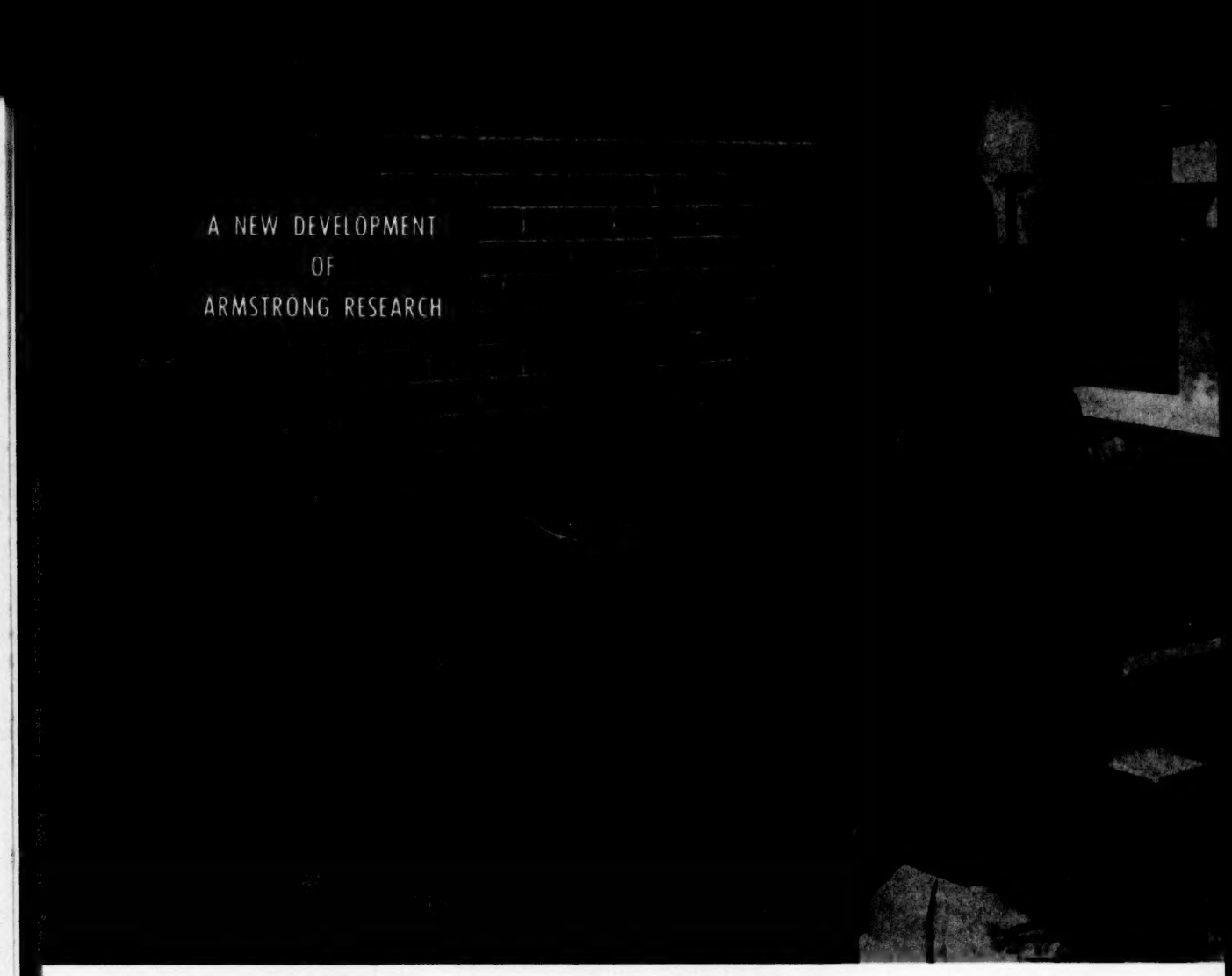
The 8000 square feet of ski surface required a huge amount of ice to prepare it for the first performance of the three day meet. Even with the three ice crusher slingers it was difficult to make and spread the snow faster than it melted in the near 90-degree weather. During the three days additional tons of ice were used to keep the slope in condition.

Large crowds of Chicago sports enthusiasts who would not be likely to come out in the middle of winter enjoyed this exhibition of ski-jumping skill. Because the warm weather softened the snow on the ski slope, no new records were posted.

Cakes of ice disappear into this Link-Belt Model 530 ice crusher slinger at the rate of 45 tons per hour. Ice was lifted to this platform atop the east colonade with a crane.

The Model 530 Link-Belt crusher slinger throws snow about 50 feet down the slide while workmen spread it on the platform.

A NEW DEVELOPMENT
OF
ARMSTRONG RESEARCH



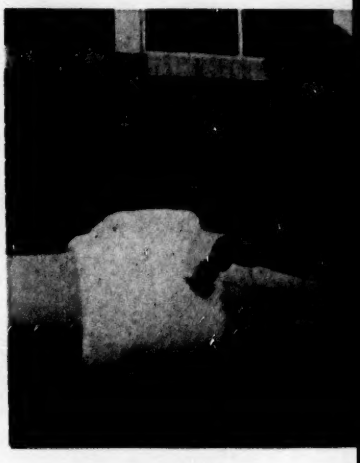
PLASTICORK . . . *a granulated cork-and-rubber insulation that can be molded to any cold line fittings*

Now you can insulate irregular fittings without having to cut standard molded covers on the job or wait while special ones are factory made. With Armstrong's Plasticork®, the workman just shapes the covers as he goes, speedily and efficiently.

Plasticork is a granulated cork-and-rubber material made in sheet form. In covering a fitting, small chunks are pulled from a sheet and packed into all voids. Full insulation thickness is then built up with pieces or with full sheets, depending on the type of fitting. When finished, the fitting compares favorably in appearance and efficiency with a regular molded cover.

Plasticork is easy to warehouse. It can be stored indefinitely without loss of plasticity. It can also be removed from a fitting and used again without loss of its original insulating efficiency or workability.

Armstrong's continuing research in industrial insulations is helping to solve many high- and low-temperature insulation problems. For complete information on Plasticork, Armstrong's other industrial insulations, and Armstrong's Complete Contract Service, call your nearest Armstrong office or write Armstrong Cork Company, 204 Stratton St., Lancaster, Pennsylvania.



Armstrong's Insulcolor, a new plastic finish for insulated surfaces, is being applied to this Plasticork insulated fitting. Insulcolor can be used indoors or out, comes in a choice of seven colors and white.

ARMSTRONG'S INDUSTRIAL INSULATIONS

Air Conditioning Adds to Floor Space in Eight-Story Office Building

WACHOVIA Bank and Trust Co. has found it possible to add 29 percent to available floor space in their 44-year old, eight-story, home office building in Winston-Salem, North Carolina. They have been able to do this by installing a complete air-conditioning system.

Bank officials had considered it necessary to enlarge and modernize the present building, or to construct a new one. It was decided that by installing air conditioning, the two-story-high main banking area on the ground level could be cut horizontally, adding an entire new floor. Additional space has been gained by constructing floors at every level across a conventional light and ventilation court which had risen vertically from the second through the eighth story. The gain amounts to 1,000 sq. ft. per floor.

Outside Service Shaft

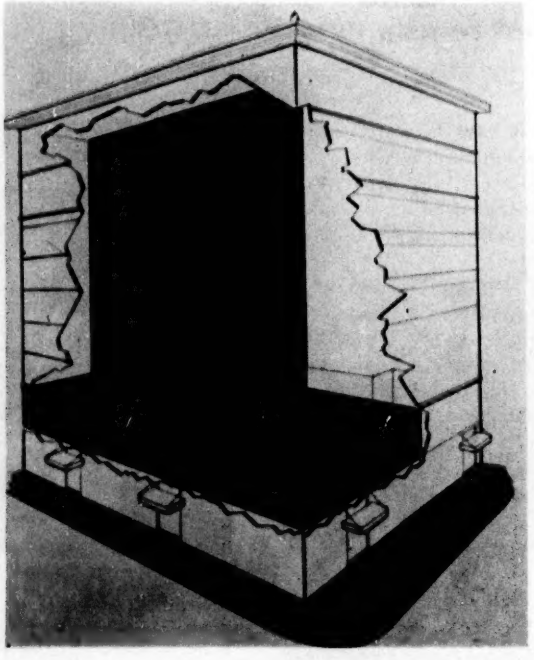
As a result of this novel approach, the air conditioning and refrigeration equipment takes up none of the reclaimed space, it is reported. A Carrier centrifugal refrigeration machine located in the modernized basement boiler room, provides cooling capacity equivalent to 220 tons. An equipment tower for central air conditioning equipment has been constructed on the outside of the building in a set-back area no longer required for natural ventilation.

Central system air conditioning units using chilled water from the centrifugal are located one to a floor in the tower, with each unit serving its entire floor. The system supplies filter-cleaned, cooled and dehumidified air in summer and heated air in winter.

Other Improvements

Other improvements provided in the modernization program include new transformers to handle the increased electrical load, modern lighting and oil-fired steam generator replacing a stoker-fed boiler.

The Wachovia bank is the first large building in Winston-Salem to be completely air conditioned. It is representative of an increasing number of contracts received by Carrier Corp. for air conditioning of business structures of moderate size which can provide first-class office space, according to Chas. V. Fenn, vice-president, Machinery and Systems Division. Virtually all new big buildings constructed since the end of World War II have included complete air conditioning. Last year, the number of contracts for older buildings equalled purchases of systems for new ones. This trend is affecting not only the very large and widely-known multi-story structures, such as the Irving Trust Company in New York, but the smaller ones as well, Carrier representatives state.



Cutaway drawing of Wachovia Bank and Trust Company, Winston-Salem, N. C. which was able to increase floor space 29 per cent as the result of an air conditioning installation by Carrier Corporation. The original high-ceilinged ground-floor banking area was cut in half horizontally providing a new second story. The old ventilation court was floored over as indicated by the blacked-in area.

Coliseum to Include Large Skating Rink

A LARGE ice skating rink is planned as one of the facilities to be offered by one of America's largest coliseums now under construction at Charlotte, N.C. The coliseum is circular-shaped and its roof will be the largest structural steel dome in the world, spanning over 332 feet at extreme diameter. Also under construction on the site and adjacent to the Coliseum, is an ultra-modern, air conditioned and sound-proofed auditorium. Both structures are scheduled for completion in April 1955 and are being built at a cost of four million dollars.

Refrigeration equipment for the rink is being furnished by Amreco, Inc., Minneapolis, distributor for Worthington Corporation. It includes two ammonia compressors each capable of producing 80 tons of refrigeration with 22 lb. suction pressure, 10 F super heat, 185 lb. discharge pressure with each driven by 125 hp 720 rpm motors through direct coupling; two brine pumps each rated 450 gpm, for circulating brine through the piping system; and one monobloc spray water pump.

Designed to accommodate a wide range of sporting and entertainment events. the Coliseum will have a seating capacity of 10,000 with portable seats provided to increase capacity to 13,500 when necessary. In spite of this enormous seating capacity, aisles and passageways have been designed so that the building can be emptied within four minutes. The structure will be equipped with overhead type doors to be used to partition off certain areas, and on the second level, a large glass enclosed concourse will surround the entire seating area.

The Auditorium will feature a 100 x 50 foot stage with a 60 foot proscenium and will have a seating capacity of 2,500. Acoustic system has been planned so that those in extreme rear of building can hear without difficulty.

Located on Charlotte's six-lane Crosstown Boulevard, these buildings will be within 15-minutes driving time from the heart of the city.

Auto Tanks Tested in Cold Weather Hangar

A special cold weather hangar established at Eglin Air Force Base near Pensacola, Fla. has been made available for testing equipment being made for the armed services. This article tells how two Cadillac army tanks were subjected to sub-zero temperatures.

Bundled against man-made cold, Warren Young checks oil level of an auxiliary engine in a Walker Bulldog Tank.

FOR testing airplane engines under extremes of low temperature, a special cold weather hangar was established at Eglin Air Force Base near Pensacola, Fla. in 1947. This testing equipment has been made available to private concerns producing engines and automotive equipment for the armed services.

Typical of this service, a group of engineers recently tested two Cadillac tanks in the sub-arctic weather conditions in the hangar. In a region where average temperatures are in the 90's, they worked in below zero readings, 65 below at times. At this temperature, according to Don Johnson, assistant staff engineer in charge of the project, steel becomes brittle and rubber gets as hard as metal. If you touch metal with bare flesh, you stick to it, and you have to wear a surgical mask to warm the air a bit and keep frost out of your nostrils.

Artificial snow covered equipment and tanks at the low temperatures. "You have a feeling when you go into the test room that nothing can happen at that temperature," said Don. "You think you've been working for five minutes, when actually it was 15 or 20."

Plenty did happen, although personnel had to alternate work periods every half hour. Looking like so many cocoons, they reported on how controls could be manipulated through layers of bulky clothes. These were a special pliable issue; ordinary clothes would freeze solid immediately on entering the room.

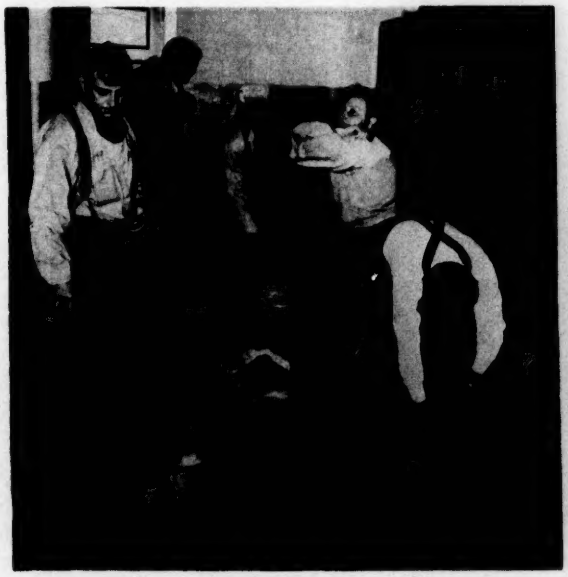
But the important testing was on tank components themselves. The vehicles were taken off the production line but were winterized for the project. Bounced over obstacles in the "deep freeze," their suspension units received one of the most severe punishments known. Further tests covered engine, turret, weapons and other parts of the tanks. Guns were even fired, using specially built gunports.

Besides the lowest temperature, there were tests also at 70 and 20 degrees above and 20 and 40 below. Standard heaters were used inside the tanks although special equipment heated the engines.

The project was a joint effort of Cadillac, the Detroit Arsenal and the Air Force. While other experiments were conducted before in Canada and the Yukon, the Eglin Field test added much information to that available on cold weather tank performance and was considered highly successful, according to Bob Spinner, staff engineer.

"As a matter of fact," Bob stated,

Reprinted by permission of Cadillac Motor Car Division Detroit, Mich.



Left: Personnel could work only a half hour at a time in the "deep freeze." Above, one of the shift peels of layers of arctic-designed clothes.

Below: Checking bore sighting retention for possible deviation from original settings in sub-zero temperature.

"the tests were more reliable and conclusive than if they were held in the actual Arctic. We can keep controlled temperatures in the test room for long periods of time while in the North it seldom goes below minus 40 F more than a few hours at a time.

"Another important factor is personnel efficiency and well being. In the Arctic they would get no respite from the cold. At Eglin, we could just walk out of the room and get warm again."

The engineering personnel had some compensation for the cold; they were in Florida, after all. A dip in the blue waters of the Gulf of Mexico after work hours and a nap on the snow white beaches put thoughts of cold as far away as the Arctic.

Refrigeration Equipment

Heating for producing high temperature or low relative humidity is produced by two 320-hp 125-pound steam water tube boilers and one 90-hp fire tube boiler installed in a separate steam generating plant.

Refrigeration for the main hangar and the engine and equipment test room is furnished by centrifugal F-12 compressors of three units, each consisting of one high and one low stage compressor. The high stage compressors, each with four centrifugal wheels are normally used alone for test conditions requiring temperatures down to 0 F. For lower temperatures the low stage, three-wheel units are compounded with the high stage machines.

The refrigeration in this facility was designed and installed by the York Refrigeration Corporation. Of the total 9,000 hp equipment, 8,800 hp was made by York.

The nominal capacity of the three systems aggregates 750 tons at minus 95 F evaporator temperature. The capacity is adequate for a 48-hour reduction of hangar temperature to minus 70 F or for any engine or heat load now contemplated.

Insulation

Nearly all of the common insulation materials have been used in various parts of the project. The main hangar walls are insulated with 13 inches of glass wool board, inclosed on both sides with 22-gauge galvanized sheet steel. The inner vapor barrier is entirely welded with expansion V's on 10-foot centers. The external vapor barrier was soldered but has the same provision for expansion. The insulation is erected on wood studding in three layers of 4, 5, and 4 inch thickness. Because of the wall heights, 70 feet on the back and 35 feet on the side, an impervious barrier of asphalt impregnated felt was placed between the layers of insulation to prevent thermal convection currents within the air spaces between the insulation and vapor barriers. To remove moisture from the insulation, drip gutters were installed at the floor level.

Ceiling Insulation

The ceiling insulation was laid over steel decking, supported by chains from the steel superstructure. The upper vapor barrier consists of a second layer of corrugated steel decking, mastic sealed at the joints. The lower decking was welded in its entirety for vapor tightness. The use of chains for supporting the ceiling structure was chosen after careful consideration of many different methods. Subsequent tests demonstrated the desirability of this method of dealing with contraction and expansion stresses.

Cellular glass block was used for the floor insulation. Its high structural strength permits the design of allowable concentrated floor loads of 150,000 pounds, the weight of large aircraft. This insulating material is 15 inches thick and is protected by asphalt impregnated felt on both top and bottom.

Packer Curtails Operations

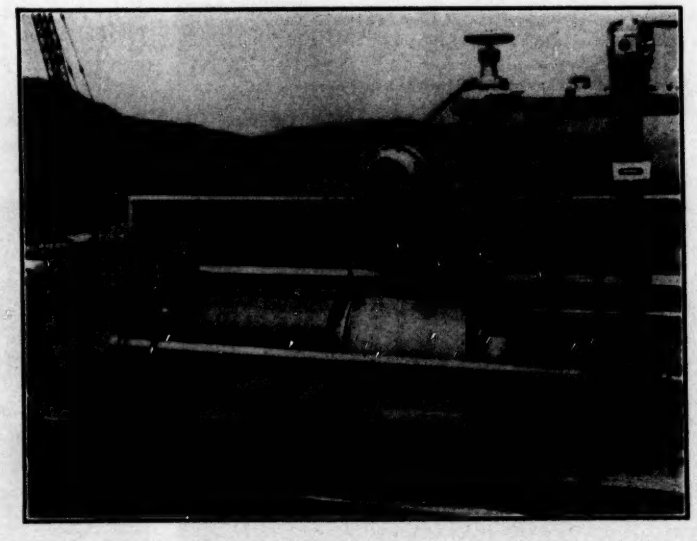
THE Hygrade Food Products Corporation, Buffalo, N. Y. once the city's largest meat packer, has halted all slaughtering operations in its plant there. The slaughtering operation has been moved to the former Kingan & Co. plant in Indianapolis, merged into Hygrade last year. Part of the Hygrade plant has been leased to Depot Warehouse, affiliated with Wilson Warehouse, Inc. for cold storage warehousing. Hygrade also is using part of the plant for storage.

Industrial Chemical Plant Uses Compressor For Handling Propane

THE Tennessee Eastman Company, with main plant and offices at Kingsport, Tenn., is active in the manufacture of industrial chemicals, acetate yarn and staple, and cellulose ester plastics. One of the chemicals handled is propane. This is stored at Kingsport for stand-by purposes, in a field of tanks.

The 3-cylinder 3½ x 4¼ "Eclipse" AHP compressor illustrated is used for transferring propane from the railway cars to the storage tanks. The machine is driven by a direct-connected motor of the explosion-proof type, and is equipped with controls of the same kind.

The Frick machine serves a dual purpose: it can be used to relieve the gas pressure in the top of the storage tank about to be filled, the gas collected being pumped into the top of the tank car; or it can be connected directly to the tank car for pumping out and saving the gas remaining when the liquid has been drained. Tennessee Eastman is a division of the Eastman Kodak Company.



Eclipse Compressor Installed in Tennessee Eastman Plant

National Ice Convention Builds Program On Problems Speakers Entertainment

Planned as an outstanding event, the annual convention of the National Association of Ice Industries will be held at the Netherland Plaza Hotel, Cincinnati, November 9-12. The unusual program and entertainment is expected to form the background for what will be the Biggest and Best Ice Industry Convention.

These Speakers Will Enliven the Convention

Arthur H. (Red) Motley

Leonard Green

Harrison Wood

THE PROGRAM for the 1954 national ice convention to be held at the Netherland Plaza Hotel, Cincinnati, November 9-12 was nearly completed the middle of October. A number of outstanding speakers have been signed up, and the entire program is aimed at dealing with the industry's major problems.

A large array of talent, counselors and speakers, from inside and outside the industry will be on hand to furnish suggestions and know-how on some of the bigger problems that harrass ice men. The committee has rounded up about two dozen men and women with ideas gained from practical experience. Included are ice men with years of experience who have been outstandingly successful in meeting their own problems, also business men from other industries who are prominent in their own fields.

The entire program has been arranged to provide those present with usable ideas and give them an opportunity to discuss their problems with people who know. All of the sessions will be factual, interesting and informative.

"How To Do" Sessions

The interest shown in the regional conferences held this summer in finding out what the other fellow is doing and how he's making out with it has resulted in devoting a major part of the convention to a new type of program — one that would be like setting down with all the ice men in the country individually, and learning from each one what he is doing that is new and different.

These "How to do it" sessions will be made up of individual ice men who have done an especially successful job of doing one particular thing. Each of these men will tell in ten minutes what he has done and how he did it.

This will open the subject. Then all of the delegates will have an opportunity to contribute their experience, or to ask specific questions. These sessions will be simple, down-to-earth, classroom discussions meetings. (A notebook and pencil will be very much in order). The discussions are bound to be idea-packed, and they should have pocket value to all.

Sample Subjects

The subjects at these sessions will include topics like the following: How we cut our costs of processing ice; How we sell ice through retail stores; What we do to hold our cube business; How we revamped our ice business; How we operate our vending units; How we serve thinly populated rural communities; How we sell ice to canners; How we make money from hydrocooling; How we get truck-icing business; How we sell channel icing of vegetables; How we sell meat-on-ice; How we keep ice in the public eye.

There will be answers to these and other questions like them from ice men who have done an excellent job. They will tell about the methods they have used and the results they have achieved.

The association officers and department directors will occupy a part of the program to bring members up-to-date on the Association's activities and plans.

Convention Speakers

The keynote speaker will be Dr. H. H. Maynard, professor of marketing and chairman of the Department of Business Organization, Ohio State University. Dr. Maynard is an authority on marketing and sales management. He is an author of several well-known text books in these fields, that are widely used by business and in college courses. He is a nationally known public speaker and a consultant of business organizations. The title of his keynote address will be "Selling Ice in 1955."

Arthur H. (Red) Motley, president and publisher of Parade Magazine will be another featured speaker. Mr. Motley is a humorous but sound speaker and will provide all who hear him with a lot to take home and a lot to think about. He will close the Thursday session.

Another feature attraction will be the appearance of Leonard Green, president of Dr. Pepper Company. As president of a company that is closely related to the ice industry and that has been outstandingly successful, Mr. Green's message will be one of the chief attractions of the Wednesday session. He is a brilliant speaker with loads of ideas. His inspirational talk "Oportunities Unlimited," should whet the interest of every ice man.

Radio commentator and global correspondent Harrison Wood will ring down the curtain on the convention. Harrison Wood is considered one of the greatest platform speakers in the United States. His new books, "This Changing Field," and "Boy, Are We Confused," show him to be eminently qualified to answer three

questions which are on everyone's lips nowadays: "Where are we?" "How did we get where we are?" and "Where do we go from here?"

He is a fearless crusader of free competitive enterprise as against creeping socialism. He is now vice-president of one of the nation's largest motor transport systems.

The Exhibits

This year, as always, exhibits will have a prominent place in the convention. The exhibit hall will be overflowing with new and improved equipment and supplies. There will be shown new methods and new machines. There will be equipment for more efficient processing, packaging, and handling of prepared ice. There will be labor-saving methods and cost cutting devices. The most up-to-the-minute developments will be on display.

Entertainment

The Committee on Entertainment is functioning as usual and recreation will be provided through the annual dinner-dance and other evening events.

Wednesday afternoon an interesting tour has been planned. It includes the Rookwood Pottery, the Conservatory in Eden Park, and a conducted tour of the Art Museum. Buses will leave the hotel and return.

Cincinnati Attractions

The Rookwood Pottery is one of the most famous ceramic potteries in the world. It was founded in 1880. From the first the Pottery established a policy of not duplicating the design of a vase or any other purely artistic piece. Its policy is to emphasize the artistic side, not mass production.

The Irwin M. Krohn conservatory is considered one of the finest public greenhouses in the United States, with a complete display of tropical flowers in addition to a wide variety of imported and domestic flowers and plants. Special exhibits are displayed throughout the year, including orchids, poinsettias and lilies.

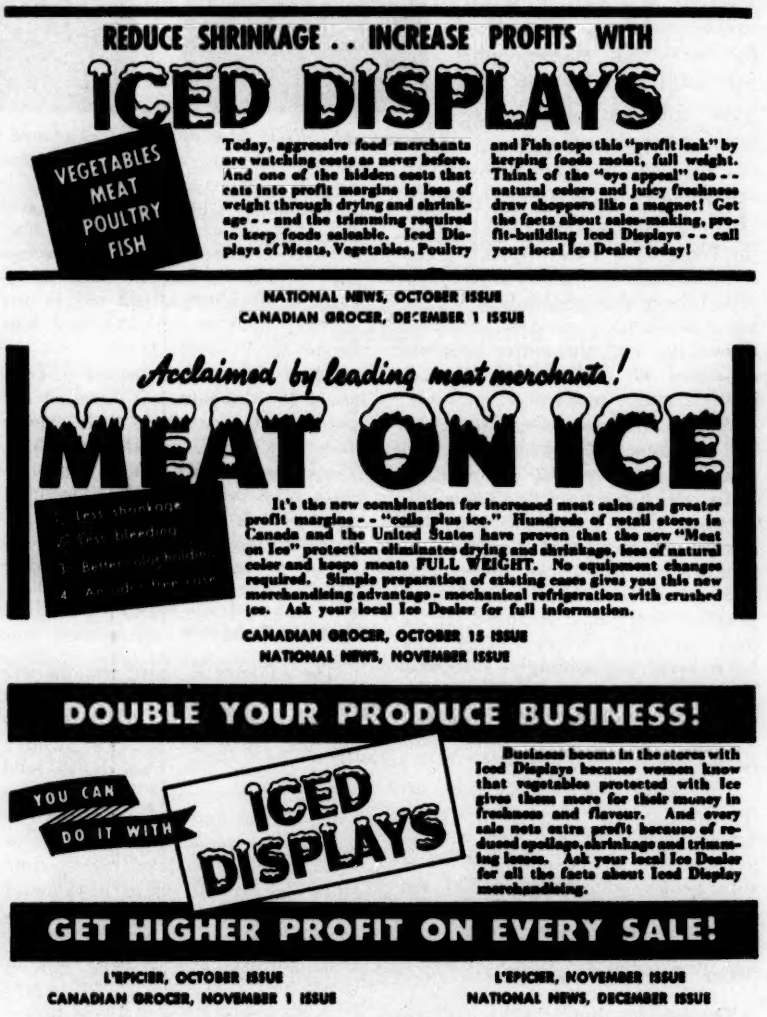
The Cincinnati Art Museum has fifty exhibit rooms and galleries in addition to the library on Art, a 500-seat auditorium, lecture rooms. The museum exhibits are many and varied, including Near and Far Eastern art from the second century B.C. to the 19th century A.D.; a children's museum, the Temple in Trans-Jordan and an important collection of Old Masters.

Canadian Ice Foundation Opens Fall-Winter Sales Promotion Campaign

AN ALL-OUT sales promotion campaign sponsored by The Canadian Ice Foundation started the first of October. It offers a three-in-one approach to ice selling: to households; to meat and produce stores; to hotels; restaurants, motels, clubs and soda fountains, driving home the need for modern ice services. It not only tells of the advantages of ice man's ice, but also advises of its easy availability. This sales campaign will continue through to the Christmas and New Years party seasons.

Reproduced above are the advertisements planned to reach the food stores through grocery trade papers. Others to be used in hotel and restaurant trade papers center their appeal on the advantages of beverage and party ice; and for the household user on prepared ice and easy availability in rotogravure and picture sections of newspapers.

Through this advertising it is expected that the grocer, the butcher, the retail poultry and fish dealer will be reminded again and again that ice is essential in the perishable food business. In many Canadian centers, during the past few years, retail food stores have become important customers of local ice dealers, and his concentrated sales effort it is planned will spur others to accept advantages of ice protection.


REDUCE SHRINKAGE . . INCREASE PROFITS WITH
ICED DISPLAYS
VEGETABLES
MEAT
POULTRY
FISH
Today, aggressive food merchants are watching costs as never before. And one of the hidden costs that eats into profit margins is loss of weight through drying and shrinkage - - and the trimming required to keep foods saleable. Iced Displays of Meats, Vegetables, Poultry and Fish stops this "profit leak" by keeping foods moist, full weight. Think of the "eye appeal" too - - natural colors and juicy freshness draw shoppers like a magnet! Get the facts about sales-making, profit-building Iced Displays - - call your local Ice Dealer today!
NATIONAL NEWS, OCTOBER ISSUE
CANADIAN GROCER, DECEMBER 1 ISSUE
Acclaimed by leading meat merchants!
MEAT ON ICE
It's the new combination for increased meat sales and greater profit margins - - "coils plus ice." Hundreds of retail stores in Canada and the United States have proven that the new "Meat on Ice" protection eliminates drying and shrinkage, loss of natural color and keeps meats FULL WEIGHT. No equipment changes required. Simple preparation of existing cases gives you this new merchandising advantage - mechanical refrigeration with crushed ice. Ask your local Ice Dealer for full information.
CANADIAN GROCER, OCTOBER 15 ISSUE
NATIONAL NEWS, NOVEMBER ISSUE
DOUBLE YOUR PRODUCE BUSINESS!
YOU CAN
DO IT WITH
ICED DISPLAYS
Business booms in the stores with Iced Displays because women know that vegetables protected with Ice gives them more for their money in freshness and flavour. And every sale nets extra profit because of reduced spoilage, shrinkage and trimming losses. Ask your local Ice Dealer for all the facts about Iced Display merchandising.
GET HIGHER PROFIT ON EVERY SALE!
L'EPICIER, OCTOBER ISSUE
CANADIAN GROCER, NOVEMBER 1 ISSUE
L'EPICIER, NOVEMBER ISSUE
NATIONAL NEWS, DECEMBER ISSUE

Fall food store advertisements scheduled by Canadian Ice Foundation.

Informal Conferences and Forums Will Feature Annual ASRE Meeting

FOR the purpose of increasing audience participation and stimulating discussion, the Program Committee of the American Society of Refrigerating Engineers is featuring a series of informal conferences and forums at its 50th annual meeting to be held November 28 - December 1 at the Benjamin Franklin Hotel, Philadelphia, Pa.

Organized in December 1904, the Society is celebrating its golden jubilee anniversary simultaneously with the 25th Anniversary of the Philadelphia Section of the Society.

The technical portion of the convention will open Monday, November 29 with two parallel sessions devoted to subjects now being widely discussed in industry: (1) An Educational Engineering Conference at which will be considered the problem of specialized versus generalized curricula in engineering colleges, presided over by Prof. F. J. Reed of Duke University, Durham, N. C., and (2) a Water Conservation Conference, presided over by R. M. Westcott of Holladay and Westcott, consulting engineers, Los Angeles, Cal., at which a number of problems relating to the use and treatment of water in industry will be discussed by well qualified engineers.

The first technical session, Chairman F. P. Neff of Tupman and Thurlow, Chicago, Ill., will be held Monday afternoon at which will be presented papers on: (1) Evolution of the Self-Contained Ice Maker, (2) The Use of Atomic Energy to Increase Refrigerated Storage Life of Fresh Foods, and (3) How the Electrical Properties of Freon Compounds Affect Insulation in Hermetic Systems.

On Tuesday morning the popular Domestic Refrigerator Engineering Conference, E. T. Morton, Admiral Corporation, Chicago, Chairman, will discuss the ever present problem of service, particularly of the hermetic system. Proponents and opponents of replacement of the complete system as contrasted with that of individual components will present their arguments. The service man's view point will be presented by a member of the Refrigeration Service Engineers Society.

Parallel with the above conference will be held the Second Technical Session, presided over by E. P. Palmatier, Carrier Corporation, Syracuse, N. Y., at which papers will be presented on: (1) Heat Transfer Coefficients in Horizontal Tube Evaporators, (2) Results of a Field Investigation of Drinking Water Usage, conducted by the National Bureau of Standards, and (3) Vapor Pressure of Water Solutions of Lithium Bromide.

Informal Discussion

Tuesday afternoon will be devoted also to two parallel forums for informal discussion of subjects vital to the industry. Seven such groups have been scheduled for this convention. These forums are designed especially to provide refrigeration engineers an opportunity to sit down and discuss informally some of the problems they encounter in their daily work. From these discussions, it is anticipated will emerge suggestions for technical papers and subjects for research.

The parallel event on Tuesday afternoon will be a symposium on Research presided over by Dean W. R. Woolrich, University of Texas, Austin, at which questions as to whether the Society should sponsor a separate research program or collaborate with other Societies, and related subjects will be discussed by representatives of educational institutions, manufacturing firms and research laboratories. Among the speakers will be Dr. Elmer R. Kaiser, newly appointed Director of Research, The American Society of Heating and Ventilating Engineers.

Owing to the large number of papers and conferences scheduled, the Program Committee decided to depart from precedent and schedule an all-day session on Wednesday, instead of adjourning at noon on that day.

The Third Technical Session will be held on Wednesday morning with F. Y. Carter, Detroit Controls Corporation, Detroit, as the Chairman. On this program, the following will be presented: (1) The "Hydrophobic" Behavior of Certain Desiccants, (2) In-Place Studies of Insulated Structures, and (3) Problems in the Prevention of Ice Formation and its Removal from Metal Surfaces.

Air Conditioner Conference

Coincident with this meeting is the Air Conditioner Conference under the direction of Chairman Herbert L. Laube, Remington Corporation, Auburn, N. Y. The highlight of this conference will be a report on the Austin (Texas) Village Project, where twenty-two homes using different systems of air conditioning serve as a field laboratory. The test results promise interesting listening. In addition, other subjects will be discussed including adding summer air conditioning to existing homes heated with warm air.

For the concluding, or Fourth Technical Session, with John Engalitcheff, Baltimore Aircoil Company, Baltimore, Md. as Chairman, the following papers have been scheduled: (1) A New Approach to Refrigeration Coil Calculations, (2) Automatic Instrumentation for Compressor Testing, and (3) Developments in Cryogenics.

Paralleling the final Technical Session there will be an informal Conference on Desiccants, presided over by Dr. W. O. Walker, University of Miami, Coral Gables, Fla.

Among other interesting features scheduled is the Technical Research Exhibit, consisting of some twenty strictly non-commercial displays of important research developments leading to the advancement of the art of refrigeration.

The Entertainment Committee, under Chairman R. G. Werden, York Corporation, Philadelphia, Pa., has been equally diligent in preparing a social program for the entertainment of the members and guests. On Sunday evening there will be a Reception at which the Committee promises a surprise feature, the nature of which they will not divulge.

Monday noon, the Anniversary Luncheon will be held at which prominent leaders of the industry will be presented and the newly elected officers will be installed instead of, as in previous years, at the Wednesday session. The highlight of this luncheon will be the presentation of a time capsule containing microfilms of the charters of the thirty-five Sections and a letter from ASRE President A. J. Hess, extending congratulations to his successor, to be opened in December 2004, the 100th Anniversary of the Society. The Franklin Institute will be asked to act as custodian of the time capsule.

The social program will include a Gala Party Monday evening in the Terrace Room of the Benjamin Franklin Hotel, featuring the spectacular Ice Show and concluded on Tuesday evening, the traditional ASRE cocktail party and dinner dance.

H. Gerald Venemann

THE death of H. Gerald Venemann, prominent in refrigeration engineering for more than a quarter of a century, occurred at his home in West Lafayette, Ind., suddenly Friday morning. October 15. Immediate cause of his death was a heart attack. He was born at Avon, Mass., March 3, 1884.

After graduating from Purdue University, Mr. Venemann was an operating engineer for Frick and Baker, doing installation of refrigerating equipment, and about 1930 joined the faculty of Purdue University as instructor in refrigeration engineering. Later he became Professor of Refrigeration in the Mechanical Engineering Department at Purdue. He retired from that position June 30, 1954.

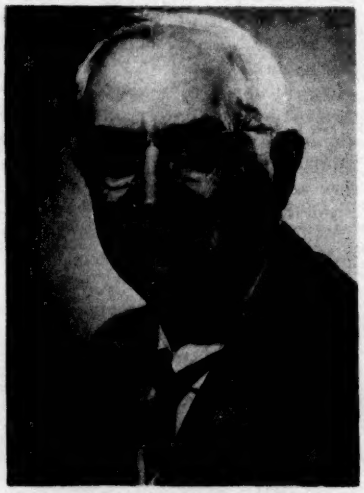
While a student at Purdue he was on the baseball and football squads. He was a member of the Purdue football squad that was in a disastrous train wreck on the way to Indianapolis to play Indiana University about 1902 in which 17 members of the squad were killed and in which he suffered an injury to his spine. He won his athletic letter in baseball. A charge of professionalism, which he contested vigorously, delayed the receipt of this letter for many years.

He had been an active member of the National Association of Practical Refrigerating Engineers for many years, joining the Omaha, Nebr. Chapter in 1924, where he was employed at the time by The Frick Company. He had served faithfully as head of the Educational Department of NAPRE since 1910. While many readers of INDUSTRIAL REFRIGERATION did not know Professor Venemann personally, they are quite familiar with the result of his efforts in promoting and providing answers for the Question Box Section for the NAPRE Department since 1942. He also had prepared many papers for presentation at NAPRE conventions.

He was the author of "Refrigeration Theory and Applications," published by Nickerson & Collins Company, Chicago, and numerous magazine articles and technical papers on refrigeration.

In a paper on "The Stuff That Makes an Operating Engineer," read at the NAPRE convention in 1952, Professor Venemann drew upon his own experiences. In a reminiscent vein he told how at an early age he became aware of the fact that a knowledge of industry and creation of a fund of information was necessary to success. Before graduating from high school, as told in this paper, he tried out three vocations: printing, painting, and school teaching. On graduation from high school he decided to become an engineer, his idea being pointed chiefly to becoming a locomotive engineer.

In 1903 he entered Purdue University to study engineering. He paid his expenses by waiting on tables, making fires, selling photographs, reporting for one of the daily newspapers and cleaning windows.



Professor H. G. Venemann

He graduated from Purdue in 1906 after which he spent a year teaching machine shop, forging, pattern making and a course in steam engines and boilers at the University of Colorado. The following year, in 1908 he entered the employment of the Northern Colorado Power Company which had built a large steam power plant over coal mines between Denver and Boulder.

Soon afterward the panic of 1908 hit the west and he was out of employment for several months. In 1909 he accepted a temporary job as teacher of science and athletics at a high school. At the end of this school year he decided to further his education in refrigeration and for this purpose he became a graduate student in the School of Applied Science at Harvard University during the school year 1909-10. After this year of study he became Superintendent of Water Works at Richfield, Idaho. The water mains of this plant were made of wood, bound with steel wire, so when a leak occurred, he said, the superintendent had to get out pick and shovel and dig until the leak was found, stop it by driving in a wooden block, then back fill.

After several months on this job he returned to Denver where he was employed by the Colorado Ice and Cold Storage Company. Here he did all kinds of work around the plant, cleaning and re-seating valves, overhauling pumps, taking indicator cards on Corliss engines, making boiler tests and analyzing the distribution of 480 tons of steam per day.

Upon the death of the chief engineer of one of the ice plants in Colorado Springs, Mr. Venemann was recommended for the job and accepted. This plant was obsolete and very much run down. However, this job lasted four years. At the end of the second year the entire plant had been completely overhauled. Improvement in the economics of operation of this plant not only resulted in an increased salary but led to a more responsible job as chief engineer of the Des Moines Ice and Cold Storage Company.

There were many problems in the Des Moines plant and although each problem was solved as it arose, life was not too happy for the "chief" or for the management at the time. He quit the operating business at the end of a year and for 11 years he designed and sold refrigeration plants.

It was during this period that he became a sales engineer for the Baker Machine Company, Omaha, Nebr. (1918-21), sales manager (1921-24) and district manager in Philadelphia (1924-28). In 1929 he became a sales engineer at Pittsburgh for the Frick Company.

In 1929 he accepted a position on the faculty of Purdue University, where he taught refrigeration and mechanical engineering, becoming Professor of Refrigeration in the Mechanical Engineering Department.

He was a member of St. Johns Episcopal church, Lafayette, a member of the Elks Lodge, a Mason and Shriner. He was a life member of the American Society of Refrigerating Engineers. He was a member of the Indiana Star Senior Golf Association since 1940 and was himself a top ranking golfer. He was a member of the Lafayette Little Theater. Sons of the American Revolution, Society of Mayflower Descendants, Phi Kappa Tau, Alpha Phi Omega, Pi Tau Sigma, and Sigma Xi.

He leaves his widow, Mrs. Elizabeth Venemann, two daughters, Mrs. Dexter Smith, Harvey, Ill., and Mrs. William L. Lyles, Avenal, Calif., and five grandchildren.

Practical Refrigerating Engineer

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS

Modernization of Auxiliary Pumps Pays

The hidden costs of operating an old pump, which includes power, depreciation, and repair costs, may run higher than investment in a modern replacement.

C. E. CROMWELL
DeLaval Steam Turbine Co.,
Trenton, N. J.

A STUDY of the economics of operating costs of an old pump could turn up highly profitable information. The appearance of satisfactory performance may be hiding real costs which could very well represent the price of a modern pump, and other appreciable savings, too.

A pump may still be delivering designed capacity and head despite its age. It is this fact, its seemingly satisfactory performance, reputation that protects "old faithful's" from closer scrutiny. Gradual decreasing efficiency is not as noticeable as a sudden breakdown. Nor are power costs looked upon as excessive, unless totaled up over a number of years and compared with similar costs for a new pump. Pump manufacturers have come a long way in designing units to reduce overall operating costs.

Improved Efficiency Cited

Consider a motor driven pump built in 1928 to handle 2,500 gpm against 150 ft total head. When originally built, it had an efficiency of 78 percent, requiring an input of 121 bhp. Due to wear and tear, and if no revolving parts have been replaced, it could be expected that the pump in 1954 would have an efficiency of about 74 percent, and would require 128 bhp to deliver the designed capacity and head.

EXECUTIVE OFFICE, NAPRE
433 N. Waller Ave.,
Chicago 44, Ill.
OFFICERS
President, L. J. Vivien,
New Orleans 22.
Secretary, J. R. Kelahan, Chicago 44.

Operating engineers of all refrigerating plants are invited to affiliate with the National Association of Practical Refrigerating Engineers, an educational association.

A modern pump for these same conditions could be expected to have an efficiency of 86 percent, requiring 110 bhp. This is a possible saving of 18 bhp. Based on a power cost of 1 cent per kwh, savings in power cost for one year (8760 operating hours) is $1176.00.

Savings Example Shown

The cost of a new pump or complete unit, and the time it would take to pay for it from the operating-savings gained over old pump are shown below and in table I, respectively. The following figures are based on 1 cent per kwh, or $ .00746 per hp. Add additional costs for freight, and for changing foundation and piping to the total cost figure.

TABLE 1—NEW PUMP AMORTIZATION BASED ON INCREASED EFFICIENCY SAVINGS.

Hours per year operation	8760	6500	4000
Savings will pay for pump base and coupling in	13 mos.	17 mos.	28 mos.
Savings will pay for complete unit in	39 mos.	42 mos.	84 mos.

Estimated price of new pump, base, coupling, $1238.

Estimated price of 125 hp 440 v 1750 rpm motor, 1390.

Estimated price of reduced voltage starter, 1170.

Total cost of new pump, motor, starter, $3798.

Even if renewal parts for the 1928 pump could restore its original efficiency, it still requires 11 hp more than the new pump. Based on 8760-hr operation per year, power cost of old unit is $719 more. Depending on how obsolete the pump parts are, they might be relatively expensive, compared with the cost of a modern pump.

If the amount saved each year on power cost were set aside to accumulate interest, the total will then represent all or part of the cost of a new unit. If a company's practice is long term write-offs, these savings may well be sufficient to pay for the new unit and additional capital expenditures.

Calculation of power cost savings and capitalization amounts can be made quickly by using the chart; (see chart page 34.) First compute the horsepower savings and multiply the results by yearly hours of operation. This chart can be used for quick approximations and can be read within about 2% accuracy.

The diagonal lines represent *savings*. The abcissa shows *hours per year* of operation. Reading vertically up the *hours per year* to the *horsepower savings*, to the left ordinate is the *annual savings* in power cost, and to the right ordinate is the *capitalization amount*. Shown are three right hand ordinates, each for different interest rates and terms of years.

The chart is based on cost of power $.01 per Kw. If in a particular locality power cost is more or less, simply multiply answer from the chart by the ratio to actual cost; i.e., if the cost is 12 mils per Kw, multiply by 1.2; if the cost is 9 mils per Kw, multiply by .9.

Case Histories Listed

The following examples are taken from records to show what improvements in efficiency have been made. Savings and capitalization amounts are taken from the attached chart:

1. Chilled Water Pump—Consider a pump installed in 1926 which has been delivering 400 gpm against a total head of 200 ft. operating at an efficiency of 70 percent with an input of 28.9 bhp. A modern pump will operate upder the same condition at an efficiency of 79 percent with an input of 25.6 bhp. This represents a saving of 3.3 bhp. The annual saving if the pump is operated 6000

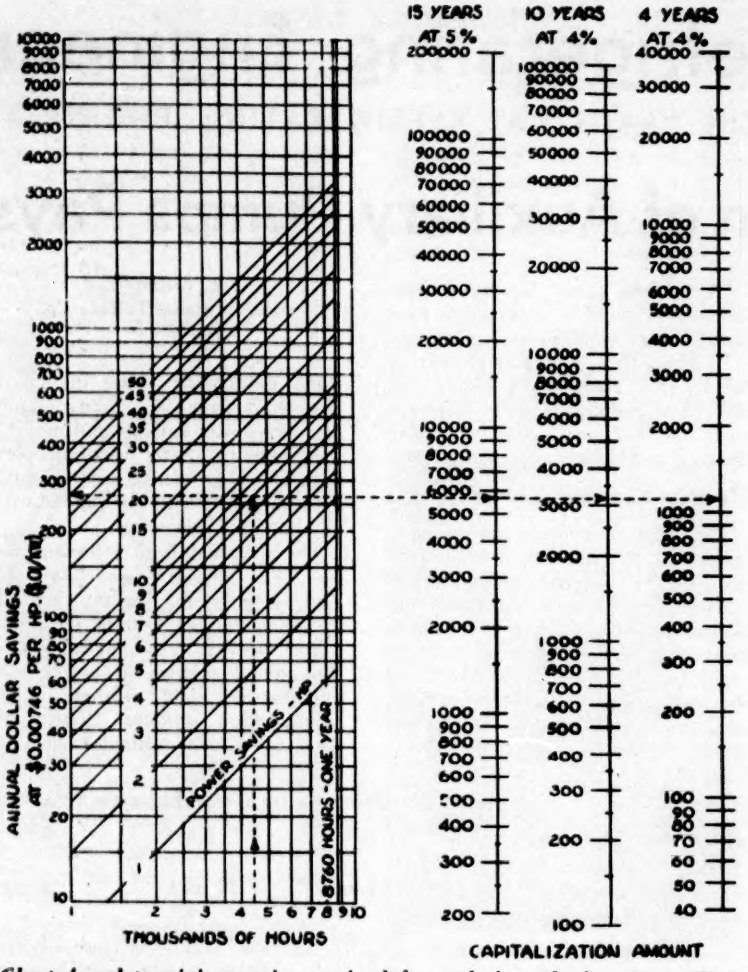

15 YEARS AT 5%
10 YEARS AT 4%
4 YEARS AT 4%
ANNUAL DOLLAR SAVINGS AT $0.00746 PER HP-(KW)
POWER SAVINGS - HP
8760 HOURS - ONE YEAR
THOUSANDS OF HOURS
CAPITALIZATION AMOUNT

Chart for determining savings gained by replacing obsolescent auxiliary pump equipment with more efficient modern units. Text explains use of chart.

hr. per yr. would be $150. The annual savings capitalized in four years at 4 percent interest represents a total of $630. The estimated cost of a new pump operating under these conditions would be $438.

2. Boiler Feed Pump-400 gpm, 650 total head at 220 F,
Efficiency 63%, 99.5 bhp, year 1930
Efficiency 69%, 91.0 bhp, year 1953
saving, 8.5 bhp

Annual saving if pump operated 8760 hours per year is $560. Annual savings capitalized in 10 years at 4 percent represents a total of $6700. Estimated cost of new pump is $1101.

3. Refinery Pump—15 mgd (10400 gpm), total head-200 ft,
Efficiency 84%, 625 bhp, year 1926
Efficiency 89%, 590 bhp, year 1953
saving, 35 bhp

Annual saving, if pump is operated 5500 hrs per year, is $1436. Annual savings capitalized in 3 years at 4 percent represents a total of $4438. Estimated price of new pump is $4054.

When accurate calculations are required for formal presentation, annual savings are obtained by multiplying horsepower savings by yearly hours of operation, by cost per horsepower hour (Kwh cost x 0.746). The annual savings divided by a factor, based on terms of years of interest rate will give the capitalization amount. Table 2 lists these factors for various terms and interest rates. These can also be used for terms other than those shown on the chart.

Engineers Aid Management

Undoubtedly, plant engineers in the industrial refrigeration industry realize that the hidden costs of operating old equipment could very well represent the purchase price of new equipment. Management officials, however must be shown why the purchase of modern equipment is a wiser investment than the continuing costs of operating the old. In some cases, the actual cost factors of operating old equipment are obscured because power costs are negligible, where power is obtained as the byproduct of some process, or the unit may be fully depreciated.

Obsolete Parts Replacement

If power and depreciation are negligible factors, which is seldom the case, there are still repair costs of some kind to consider. Obsolete parts are more expensive and require extended delivery time. Should production losses occur because of the delay in obtaining obsolete renewal parts, the losses are chargeable to the old pump. The cost of modern renewal parts for which patterns are available or the parts are in stock, represent very tangible savings. Sometimes a modern pump can be purchased at prices equal to or even less than the cost of extensive renewal parts for an old pump.

The chart and examples shown here could help engineers give management officials a graphic insight into economics of depreciation, deterioration and obsolescence for a particular installation in their plants. They will also show how the higher operating costs entailed by these three factors could be converted into appreciable savings to make modernization pay its own way.

TABLE 2 — FACTORS FOR CALCULATING AMORTIZATION PERIOD EFFICIENCY SAVINGS AT SPECIFIC INTEREST RATES.

Years	% Interest	Rate/annum,	Compounded	Annually	
	2	3	4	5	6
2	.49505	.49261	.49020	.48780	.48544
3	.32675	.32353	.32035	.31721	.31411
4	.24262	.23903	.23549	.23201	.22859
6	.15853	.15460	.15076	.14702	.14336
8	.11651	.11246	.10853	.10472	.10104
10	.09133	.08723	.08329	.07950	.07587
12	.07456	.07046	.06655	.06283	.05928
15	.06260	.05377	.04994	.04634	.04296

Annual Savings divided by factors in table equals sum including interest accumulated for number of years and interest rate selected

News Notes and Chapter Activities

Los Angeles

FRED HERR

REFRIGERATION controls, a talk by Elmer A. Johnson, plant engineer, California Consumers Corp. high-lighted the educational program when Los Angeles Chapter, NAPRE, launched its fall-winter meetings at the Terminal Club, October 6. Mr. Johnson pointed out that the operating engineer is becoming increasingly concerned with operation of automatic equipment.

Since the word "automatic" set up obstacles in the minds of engineers, he announced in his preamble that he proposed to treat the subject explicitly and plainly. Any engineer, according to the speaker, should be able to accomplish exactly what he wants to have done by determining what he wants his available equipment to accomplish, and then go about producing the desired result.

Basic equipment must be given first consideration, such as compressors, receivers, condensers, evaporators and expansion valves. All engineers, according to Johnson, are familiar with the basic units, but when they are required to do some specialized job, and to do it accurately and automatically, they are confronted with the need for other equipment to supplement the basic machinery.

He discussed the various automatic control units which the engineer is required to use from time to time. He went into detail on such items as proper installation and operation of thermostatic expansion valves, float valves and solenoid valves, touched upon back-pressure regulation; referred to thermostatic switches, fluid activated switches, fluid level and temperature activated switches.

At the business session, presided over by President Frank Eccleston, twenty-one new members, signed up before the close of the national drive, were inducted. Membership Chairman, Frank G. Muzzy, reported the local drive had produced 53 new members, bringing the chapter's total, as of October 1, to 337. Muzzy cited as a commendable feature of the drive, that many new members were signed by men who themselves could still be regarded as new members. He also reported that applications of four new members are already on file to start off the 1954-55 drive.

Lawrence H. Benedict, Chairman Educational Committee, recommended that the membership be invited to assist the committee in drawing up the speakers program for 1955. He declared that the system of choosing subjects early in the year, and subsequently trying to get speakers to discuss them, has not worked out too well. He requested members to suggest subjects and possible speakers at the November general meeting.

Golf Tournament

Los Angeles Chapter's fourth annual golf tournament, held October 3 at the Montebello Golf Club, produced a surprise as startling as Cleveland's downfall in the World Series. The three-time previous winner, Frank Eccleston, finally bit the dust. Frank shot a 93 and finished 10th in a field of twenty, and the only explanation was "It must have been something I ate."

Cups for the winners were presented at the October 6 meeting: Frank G. Muzzy, low net (77); V. A. Stubblefield, second low net (78); Alvin Beck, low gross (84); and R. L. Maple, second low gross (90). Muzzy was the winner of the E. T. Quinn trophy, which was presented to him by Quinn himself.

The October 6 preliminary class was conducted by George Paulick. The subject was "Compressor Calculations," as presented in chapter 20 of Guy R. King's text, Basic Refrigeration.

Rio Grande Valley

ARMIN DONEIS

WHAT is Rio Grande Valley's loss, will be Kansas City and NAPRE's gain. We're referring to the transfer of John Muller from the jurisdiction of our chapter to Kansas City, Kansas as district engineer for Railways Ice and Service Company. John was the chapter's instructor and will be sorely missed.

Announcement of Muller's transfer came at the September 14 meeting. Dan Chapman, our vice-president, who was presiding, declared a leave-taking celebration in John's honor, and the usual routine was set aside.

Dan officially thanked John for his excellent service to our chapter. In response, John told of the satisfaction he derived from teaching the technical material, and the pleasure he got from helping others to dig out the answers themselves. Doubtless his efforts were richly rewarded in personal growth and development which contributed directly or indirectly to his promotion. He said he was convinced that his service to NAPRE boomeranged unexpected blessings upon him. He urged all members to be faithful to their chapter, and promised that their time and interest would be very worth while, if they'd "ask questions" and take full part in this self-help organization.

While Sergeant-at-Arms, Clyde Young, escorted John Muller to a table heavily laden with a spread of refreshments and assortments of ham, cheese, potato chips and all the fixings of a good cold lunch, the rest of the chapter made contributions to the "kitty" for the purchase of a going-away-gift which was presented prior to our September 28 meeting. At the latter meeting the chapter received a letter from John expressing his appreciation for the Samsonite luggage.

Dampening our exuberances at the two September meetings was the announcement by the vice-president, Dan Chapman, that B. F. Wilson, Jr., our president, was in an Oklahoma hospital suffering from paralysis due to a blood clot on the brain. At a later meeting, it was reported that he had shown only slight improvement. Much concern and sympathy was expressed by the members present.

At the September 28 gathering, Armin Doneis, secretary of the chapter, was elected chapter instructor. There being no further business, the session was turned over to the new instructor for the study of condensers, their function, design and operation. During the Question Period the problem of air-conditioning our meeting room was discussed again, and various members reported having surplus equipment of different kinds that might be incorporated into an aircooling installation, using ice to cool the room on meeting nights. A list of available components was made, showing who would be responsible for furnishing and delivering the necessary parts.

Tulsa

JOHN BOYCE

THE resignation of Jim Parks as secretary-treasurer of the Tulsa Chapter was accepted and President Bob Palmer appointed John Boyce to fill his unexpired term, at the September 28 meeting. The entire meeting was occupied principally with discussions of the membership program for 1955. Tulsa has its eye on that small chapter trophy (we had it in 1952) and is starting as of now to win it back in 1955. The chapter is also starting a refrigeration course anew. It was the concensus of opinion of the members present that sufficient new members, and a couple of lapsations in the instruction program, warranted a new start.

Green Bay

JIM SCHOUTEN

THE FALL activities got under way at Green Bay with our first meeting on Wednesday evening, September 15. The meeting was held at the Chief Oshkosh Brewing Company, Oshkosh, Wisconsin, where our president, Lester Winkler, is chief engineer.

Over 25 members were present at Oshkosh and eleven of them brought their wives. The hospitality of our host was wonderful. After a trip through the brewery a fine lunch was served in the bottle house. There were awards and several lucky boys went home with "6-paks".

A very brief meeting was held before the tour at which time the members were notified that the October meeting would be in the Vocational School at Green Bay. The instruction course gets under way at that meeting. The secretary asked the members to give a little thought to the selection of treasurer for the group so that part of the book work burden could be shifted from the secretary. The treasurer will be selected at the October meeting. There were five new applicants for membership. The Chapter is sending its first three delegates to the National Convention, our first since being chartered.

St. Louis

KEN HOLADAY

YOU'RE just borrowing trouble to install equipment without enough surface to handle your load, according to Fred McKenna, chief engineer, Kennard Corporation, and member, St. Louis Chapter. Speaking at the September 20 meeting, on the subject "Water Conservation in Refrigeration Systems", Mr. McKenna reviewed the salient features of spray ponds, cooling towers, and evaporative condensers.

He pointed out that some type of recirculating system is becoming increasingly important for commercial and domestic air conditioning systems, as well as industrial refrigeration plants. Even where the primary source of water supply may be plentiful, there is generally a shortage of capacity in city water distribution piping and sewers.

Operating characteristics and load conditions determine which kind of equipment is best for the individual application, he said. He indicated velocity ranges, unit surface requirements, and economical performance specifications. He also discussed the use of air-cooled condensers and air-cooled desuperheater sections on water-cooled condensers.

During the Question Box period, Charles Good presented a problem of how to determine the cause of excessive compressor discharge pressures. Al Loeffel, Harold Suter, Les Fleiter, Gene Kessler, and others contributed to a lively discussion of this problem. H. Reichenbach, Branch Manager, Frick Company, Frank G. Jaeger, Sporlan Valve Company, guests, and W. H. Krack Sporlan Valve Company, an NAPRE member transferred from California, were introduced to the chapter by President Stan Tatalovich.

Memphis

CHAS. CONLEY

ON WEDNESDAY, September 1, a business and educational meeting was held and plans were made for the Chapter's educational program for the coming year. H. L. Todd will continue as the Chapter's Instructor, and H. W. Walling will continue as Technical Advisor. A business meeting will be held on the first Wednesday of the month, and an educational meeting will be held the third Wednesday. A committee has been named to arrange for talks on various industries of the city. Plant visits are to be made. The Guy King course will be continued.

At the September 15 meeting, Mr. Todd lectured on the subject of brine for refrigeration. He told of the advantages in the use of brine, how it should be cared for, how to keep the correct pH and what takes place when the correct pH is not kept, what brines are made of, how necessary it is to keep the correct specific gravity for the temperatures required, how to check the brine for specific gravity and for the pH value, and kinds of material to use for brine making. Virgil Samuel Byrd, assistant engineer, International Harvester Co., was elected to membership.

Milwaukee

"ANDY" ANDERSON

FIRST president of the Milwaukee chapter is E. Pat Kelly, chief engineer, Wisconsin Cold Storage Company. He was elected at the September 22 meeting of the chapter held at the Milwaukee School of Engineering. Until his election, Pat had been the chairman pro tem of the formation committee.

Other officers elected for the first time are: John Alberte, Schlitz Brewing Company, vice-president; L. J. "Andy" Anderson, secretary; J. H. Schmidt, treasurer and C. A. Tondreau, sergeant-at-arms. The board of directors elected consist of the following: C. W. Stoner, A. W. Rohloff, LeRoy Gittins and Charles Randolph. Nominations were made from the floor at the meeting rather than through a nominating committee as this election was our first.

C. Ward Stoner has the distinction of being the only previous member of NAPRE and was instrumental in the

ANOTHER GAY ACHIEVEMENT in REFRIGERATION

GAYVAC PRECOOLED CORN

brings premium prices

The recent highly successful experience of the Crystal Ice Company of Phoenix, Arizona in shipping corn which was processed in a *Gayvac* "Vacuum Cooling Unit" to Eastern markets, is another example of refrigeration progress, attributable to Gay Engineering Corporation.

OVER 50 YEARS EXPERIENCE

ENGINEERS • CONTRACTORS

ICE PLANTS • BREWERIES • CITRUS STORAGE
VACUUM COOLING • MEAT PACKING PLANTS
AIR CONDITIONING • ICE SKATING RINKS

GAY ENGINEERING CORPORATION
2863 East Eleventh St. • Los Angeles 23, Calif.

formation of this chapter. Members at Los Angeles and Chicago Chapters will recall Stoner's activities in their chapters prior to his move to Milwaukee. Ward is one of Professor H. G. Venemann's first students of refrigeration when he went to Purdue.

Following the election of officers, the educational program chairman, our vice-president, presented a movie on expansion valves and refrigerant controls furnished by the Alco Valve Company. This firm offered each member of the chapter present at this showing a copy of their handbook on automatic refrigerant controls.

Indianapolis

ANTHONY WOCHNA

INDIANA Terminal and Refrigerating Co., through Wm. E. Ready, made facilities available for the first large-scale meeting of the Indianapolis Chapter, held on September 22. NAPRE's National Board Chairman, Bert C. McKenna addressed the 30-odd engineers present. He told them how to go about forming a successful chapter.

Assisting with the details was National Secretary, Dick Kelahan. Professor H. G. Venemann, the National Educational Chairman, also addressed the prospects and members present. His remarks were not limited to refrigeration nor education, and it was evident that his humanitarian ideals and quick wit have had as much to do with his success as the former.

In addition to the acting president, the writer of this column, our secretary protem will continue to be Frank Behring. Frank was away on vacation at the time of this meeting. Ben Paller consented to perform both as a sgt.-at-arms and vice-president in obtaining suitable meeting quarters and getting the educational program underway, John Keenan volunteered for duty as Chapter Instructor.

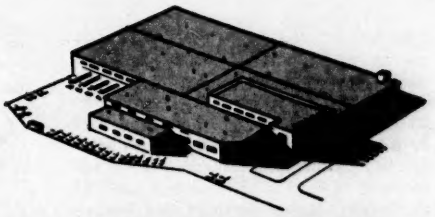
Pittsburgh

OTTO KNOCH

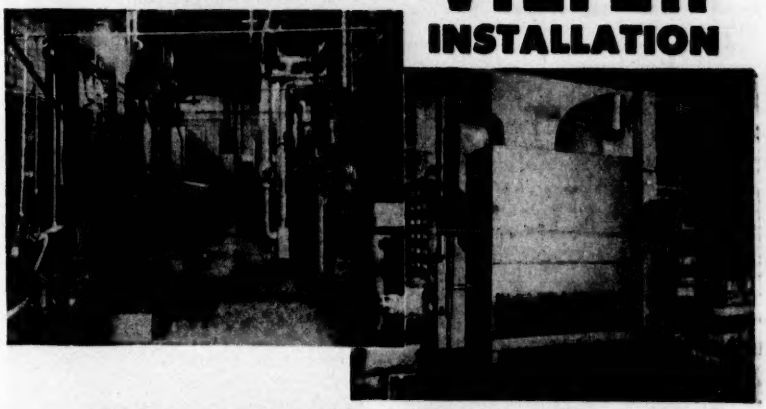
TELEPHONE committee follow-up to a new type of meeting notice turned out the best attendance at Pittsburgh in many years. This was the first Fall meeting, held Thursday, September 23, at the Fort Pitt Hotel. Our meeting notice this year is an ordinary letter, planographed and circulated to each member. However, it was felt that the personal contact by the telephone committee, composed of officers and committee men, was the most effective method of turning out the large attendance.

Pittsburgh estimates that it will complete the Guy R. King course by Christmas. Therefore, the chapter voted to shorten the instruction period to 45 minutes and has added a list of current interest speakers to each meeting. This should carry us to April when we look for the national committee to bring out a new program. The chapter has previously indicated its desire to see the present course continued with the assistance of a standard instructor's guide or manual, and an ultimate goal of a certificate to those members completing the course under such instruction.

Kroger



uses complete VILTER INSTALLATION



The modern new Kroger Company warehouse in Charleston, West Virginia is equipped completely with Vilter refrigeration units—a vote of confidence in Vilter refrigeration. As in a previous Kroger job, this new refrigeration system started operation with a minimum of attention and adjustment . . . a real blessing in getting a new plant off to a "flying" start.

This well-engineered installation consists of three VMC ammonia compressors, each selected for a definite temperature condition and cross-connected for flexibility. The freezer compressor, air conditioning compressor, and storage room compressor of 25, 40, and 50 h.p. sizes balance the specific load requirements of the various sections of the warehouse—including the Banana rooms, dry produce room, wet produce room, dairy cooler, and meat cooler. In addition to the compressors, there are Vilter brine spray-type air units, suction accumulators, evaporative condensers, and controls to complete this custom designed refrigeration installation. Vilter supplied the "complete refrigeration package" . . . thereby simplifying installation, operation, and maintenance problems.

Vilter understands how to design refrigeration systems to meet the specific needs of the job. That's why Vilter not only provides you with the "right" refrigeration . . . but knows how to cut down on the amount of costly space and also lower installation and operation costs. Furthermore, "among the men who know," Vilter has earned recognition as having a refrigeration system that keeps on running day in and day out—protecting your investment in meats, food, and produce—and doing so at lower operating and maintenance costs!

Vilter gives you a well-engineered product and a well-engineered installation. For dollar saving ideas and "top" refrigeration equipment consult your nearest Vilter representative.

Vilter.

Your nearby Vilter Representative or Distributor will be glad to show how Vilter refrigeration can help you.

REFRIGERATION and AIR CONDITIONING

THE VILTER MANUFACTURING COMPANY, MILWAUKEE 7, WIS.

Air Units • Ammonia & Freon Compressors • Booster Compressors • Baudelot Coolers • Water and Brine Coolers • Blast Freezers • Evaporative & Shell & Tube Condensers • Pipe Coils • Valves & Fittings • Pakice and Peterfrieze Ice Machines

Colton

HARRY BONTER

CALIFORNIA Chapter No. 5, on September 8, suspended the business meeting and members, friends, their wives and children enjoyed a picnic lunch and fun at Devil's Canyon, North of San Bernardino, Calif. There were over fifty orders for the hamburger chef. From reports everybody had a good time under a full moon and stars. Business meetings and educational sessions started again with the October meeting.

Members-at-Large

LEROY ETZEL

THIRTY-FOUR members-at-large were admitted by the National Board of Directors during the fiscal year just concluded. Of this number 32 were in the active classification list. The hotel industry was more than well represented in this group, having a total number of 16, of which 5 were sponsored by Erich B. Utescher, NAPRE'S Publication Chairman.

R. G. Summers, member-at-large, Buffalo, all 212 pounds of him.

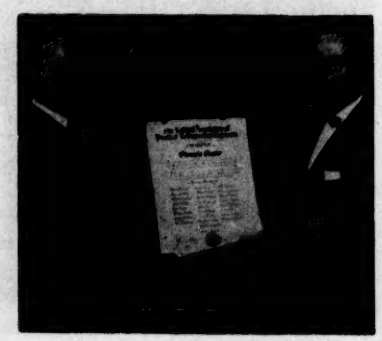
Other industries represented were cold storage, food freezing, meat packing, petroleum refining, ice, research and pharmacal. States represented by this increased membership, in addition to New York, are Alabama, Texas, Colorado, Utah, North Carolina, District of Columbia, New Jersey, California, Indiana, Nebraska, Pennsylvania, Wyoming, Maryland, Washington, Florida, Kentucky and Panama.

Members are John F. Albach, Lawrence G. Allan, Chas. N. Ayers, Wm. Baker, Larry W. Banta, Chas. F. Belew, Frank M. Cookerly, John A. Gealta, Dennis O. Gunnerson, Wm. R. Heins, Joe LeRoy Henry, Wm. J. Hoover, Wm. W. Johnson, Ray E. Judson, Wm. H. Laverty, Wm. Lorenz, Wm. C. Maher, Paul F. Northam, Mitchell Pinn, Will C. Presley, Clifford Rand, Wm. L. Rethman, Russell Siebert, Robt. G. Summers, Wm. F. Taffyn, Jas. E. Binning, Cletus Burger, Dick Falbo, John H. Storer, Harry F. Griese, Jr., Frank L. Kain, Chas F. Kues, Jr., and Rob't L. Missig.

Among the members-at-large participating most in our Question Box and other services to members, was Bob Summers of the Statler Hotel at Buffalo. Bob not only took advantage of services through the Question Box, but contributed his part too with many replies to other members' problems. The officers of NAPRE encourage the efforts of members like Bob Summers, who appreciate the objectives of NAPRE.

Peterson Presents Charter to Olympia Chapter

ON TUESDAY evening, September 21, at a dinner meeting held at the Olympia Gold and Country Club, the Olympia Chapter of NAPRE received its charter from Howard H. Peterson of Yakima, a past National President of the Association. Peterson was deputized by President Leo J. Vivien to represent him at the affair.



Albert W. Giles, left, Olympia President, receives the NAPRE charter from Howard H. Peterson, the National Deputy, at Installation Night Ceremonies, Tuesday, September 21, at Olympia Golf and Country Club.

Twenty-five members of this new chapter were initiated and officers installed. Mr. Peterson was assisted by Gil Hickock, President, Washington Chapter No. 1, Seattle, Elmer Johnson, Secretary and Otto Stolz, Washington Chapter No. 2, Tacoma. Officers of the Olympia Chapter are Albert W. Giles, president, Charles E. Devine, vice-president, Gordon G. Cochran, secretary-treasurer and Al. E. Harder, sergeant-at-arms.

Members initiated were Thomas W. Turner, Warren M. Dibble, Lyle Premo, William H. Kolze, Eugene M. Pratt, Roy D. Madison, Alfred W. Reed, Matt S. LaFontaine, John L. Anderson, Bruce Petrie, LeRoy C. Beham, Walter W. Lohrer, Hoffer Jensen, Philip J. McLaughlin, Robert L. Jones, Bertrand Holmes, Leslie C. Mounts, E. M. Payne, Orville A. Ross, William R. Cahill. Chas E. Devine and Falconer Anderson were previously members of Tacoma Chapter. Anderson presented the petition for a charter to the National Office.

Olympia Brewing selects convention attendant: (l. to r.) Trueman Schmidt, Falconer Anderson, Dewey Rigg, and Charles Devine. Dewey congratulates "Chuck" on his selection as representative to the NAPRE convention.

Installation Officials: Elmer Johnson, Secretary, Tacoma; Howard H. Peterson, Past National President, Presiding Officer; Chet Bertus, Secretary, Seattle; Gordon Cochran, Secretary, Olympia; and Falconer Anderson, Olympia Petitioner.

Members of other Chapters attending this installation were Phil Gilmore and Bill Treloar from the Tacoma Chapter and Chet. Bertus and Clarence Giel from the Seattle Chapter. Guests present at this meeting were Robert Schmidt and Trueman Schmidt, Vice Presidents, and Dewey Rigg, Resident Engineer, Olympia Brewing Co. Dewey Rigg announced at this meeting that the Olympia Brewing Co. was sending Charles E. Devine to the National Convention to be held in New Orleans in November.

Ice For Broiler Display

THE Indiana Association of Ice Industries is again cooperating with Purdue University's annual broiler show by furnishing ice for display of broiler chickens. Indiana is one of the leaders in production of broilers and this industry constitutes a sizeable outlet for ice man's ice.

Liquid Trap Responsible For Lower Suction Pressure

QUESTION NO. 1021: In a cold storage and freezing plant, we used to make good time with 2 — 10 x 10 single acting compressors. Then as the plant grew larger, a third compressor, also a 10 x 10 single acting, was added; also a liquid trap. Now, before the trap was added, we used an accumulator and never got down to zero pressure on low side, but since the trap was added, we have to get 5 in. vacuum and cannot make the time we did. The trap is between the accumulator and compressors. Now does the accumulator form a pocket there, as the trap would work as an accumulator? Our high side runs from 120 to 150 psig normal; low side, 5 lbs. to 5 in. vac. We freeze sea food.—C. B., New Jersey.

ANSWER: I am not sure that I can tell you exactly what your trouble is. Since you have added a third 10 x 10 compressor, your suction pressure would normally be less than it was before. A 5-inch vacuum represents a temperature of minus 34.5 F as against a temperature of minus 28 F with zero pressure. This lower temperature in the coils should give you a slightly quicker freezing time, and since you say you are not freezing as quickly as you did, you must not be getting a 5 inch vacuum in your coils. This may be due to too small a suction line into the three compressors.

I do not see any advantage in adding a liquid trap because the original accumulator was installed to trap surplus liquid from your coils, and prevent damage to your compressors.

If you will send me a sketch showing the size of the suction lines, and their arrangement, with the old accumulator and the new liquid traps, I may be able to tell you what your trouble is.

Another thing to look into is the accuracy of your suction gages. Do you have one for each compressor or is there only one for the three machines?—H.G.V.

NAPRE

Question Box

The National Educational Committee, NAPRE, answers monthly in this column, operating problems forwarded by members. The Committee appreciates answers from the field. Both questions and answers should be addressed to NAPRE Question Box, 435 No. Waller, Chicago 44, Ill.

Vapor Effects on "Freon"

QUESTION NO. 1022: I am in need of some information on the characteristics and traits of "Freon-12", especially such as the effect of air and moisture on the "Freon" when either enter the system. If you have any data on the above, please forward it to me, or let me know where to send for the information.—T.T.L., Idaho.

ANSWER: I believe that the Kinetic Chemicals Inc. of Wilmington 98, Delaware, would be glad to mail you one of their circulars on the characteristics of Freon 12.

The effect of air is to raise the discharge pressure, and thus increase the amount of power required to operate the compressor. This air usually accumulates in the liquid receiver or condenser and must be purged the same as if it were in a system using anhydrous ammonia.

The effect of water is to stop up the expansion valves or capillary tubes. The Freon 12 does not dissolve in the water, so that it freezes when passing through the expansion valve. That is the reason that all Freon jobs use de-hydrators in the liquid line. I hope that this gives you the information you want.—H.G.V.

Glycol Properties Sought

QUESTION NO. 1023: I would appreciate some information as regards eutectic solutions. The information I particularly need is mixtures to

(See page 42)

Merchandise Processed Ice Sell in Attractive, Handy Packages 24 Hours a Day

Polar PROCESSED ICE VENDOR

The year 'round demand for processed ice is increasing! You can make cubed and crushed ice available in all convenient locations in your city with POLAR Processed Ice Vendors. The investment is surprisingly low!

Write or Wire Today for descriptive literature and prices. Dept. I-11.

Model C-2

GREATER ICE PROFITS FOR YOU WITH POLAR VENDORS

Available in two models:

Model C-1 single Belt capacity 40 10 lb. bags. Storage 200 10 lb. bags.

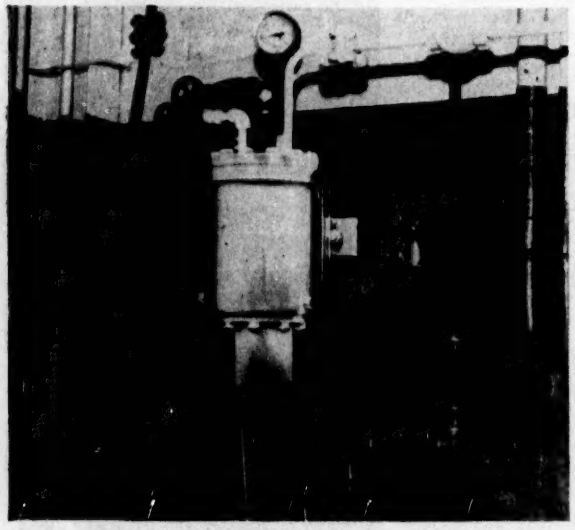
Model C-2 double Belt capacity 40 10 lb. bags on each belt. Storage 350 10 lb. bags.

IF YOUR REFRIGERATION HEAD PRESSURE IS *UP* SO ARE YOUR COSTS!

IT PAYS to KNOW if the condenser pressure in your refrigerating system is higher than it should be because every 4 lbs. excess pressure raises power costs 2% and reduces capacity 1%. (Excess pressures of 15 to 50 lbs. are common.) In 9 out of 10 such cases air and other non-condensables in the system are responsible for this condition.

Ordinary purging methods seldom, if ever, get rid of all the air; they invariably waste a lot of expensive refrigerant and take a lot of time and trouble.

The ARMSTRONG PURGER has answered this problem for hundreds of plants, most of whom report their unit has paid for itself in from 30 days to six months through power, refrigerant and labor-savings, with increased system capacity as a bonus. The Armstrong Purger requires little attention; it gets all of the air out of the system with minimum refrigerant waste. This high quality unit has a forged steel body and stainless steel mechanism for safety and reliability. The price is within easy reach of any plant. Complete satisfaction is unconditionally guaranteed. Let an Armstrong Representative help you to lower refrigeration costs. Write today.



•HOW TO TELL if purging is needed is fully explained in The ARMSTRONG PURGER BULLETIN which also shows how the Purger operates and gives prices and data. SEND FOR A COPY.

ARMSTRONG MACHINE WORKS

860 MAPLE ST. • THREE RIVERS, MICHIGAN

Super Market Plans Large New Warehouse

PRELIMINARY work is under way for a new two million dollar warehouse for Albers Super Markets, Columbus, Ohio. The building will be 760 feet long and 482 feet wide with a ceiling height of 22½ feet. Two railroad sidings with room for 16 cars along covered docks and large enclosed truck doors for 40 trucks will be included. The new warehouse will serve the 68 Albers stores in and within 100 miles of Columbus.

A completely air conditioned office will contain 10,000 square feet of floor space. Produce, meats and dairy products will be stored in 16 cooler and freezer rooms, the area 320 feet long and 170 feet wide cooled by a 200-ton central ammonia refrigeration system. This storage area will have a capacity of 16 carloads of frozen foods, four carloads of frozen fish, 16 carloads of produce, 15 carloads of butter, dairy products, margarine and packaged meats, 300 quarters of beef and four carloads of bananas.

Warehousing will be almost 100 percent mechanized through use of lift trucks and pallets. Beef quarters will travel from the incoming rail cars to ageing rooms and back to outgoing trucks by tramrail.

Refrigeration Seals Australian Dam With Wall of Ice

UP WHERE it's really cold in the Australian Alps, scientists are planning the biggest refrigerator in the world to help build one of the 14 dams of the gigantic Snowy Mountains hydro-electric scheme. There will be seven major dams and at least seven smaller dams, more than 80 miles of large diameter tunnels and 17 power stations.

Thousands of years ago a glacier left a 120 feet high hill of boulders, sand, clay and glacial debris, which would be ideal for one of the dams if it were solid enough to prevent seepage. To seal the hill by cement injections and chemical processes, would cost too much. So the hill will be pierced by lines of refrigeration pipes. A wall of ice will seal the hill. Because the area is under snow for more than half the year scientists say only small amounts of power will be needed to keep the wall frozen.

New Frozen Food Plant in Akron

THE FIRST frozen food plant in Akron, Ohio is under construction by the Akron Standard Market Company. The plant, which is expected to be in operation by June, 1955, is estimated to cost $300,000. Initial operations will be confined to producing Grand Duchess steaks, distributed throughout Ohio by the company. Facilities are designed to enable eventual processing and packaging of fifty tons of meat a week. Located a few blocks from the company's headquarters, the two story concrete and steel structure is being built around a newly developed packaging and freezing machine with a capacity of 2,800 packages in sixty-eight minutes.

British Taverns Now Sell Ice Cream

EIGHT hundred taverns in Britain will sell ice cream throughout the year if a brewery company's experiment succeeds. The company has installed ice cream booths in its taverns in three cities in England and if sales are good, the business will be extended to all its pubs. "We expect lots of our customers will want to take some ice cream home, even if they prefer to stick to beer or liquor themselves," a company spokesman said.

Refrigerated Warehouses Increase Freezer Space

FREEZER space in the public refrigerated warehouse industry has more than doubled during the past fifteen years, M. W. Young, President of the National Association of Refrigerated Warehouses, pointed out in a talk at the Southwestern-Southern Frozen Food Distributors Associations Annual Meeting in New Orleans, October 2.

"In 1939," he told the gathering of frozen foods people, "freezer space in public refrigerated warehouses totaled only 108 million cubic feet. As of October 1, 1953" and he cited USDA's recent 17th biennial survey, "freezer space in our industry totaled 258 million cubic feet—74% of total freezer space in the nation."

"And," Mr. Young added, "freezer space in our industry is being added at the rate of over 10 million cubic feet a year, keeping pace with the steadily increasing production of frozen foods." He said that changing times and new storage commodities have effected new operational methods in the refrigerated warehouse industry.

"We have to do it differently than in the old days. More and more attention is being paid to temperature and humidity control, fast handling, proper stacking, etc. We have adopted better materials handling techniques to take care of your products, utilizing modern and practical methods of storing and handling, assuring you of the ultimate protection for your frozen commodities—at the least possible cost," he said.

Mr. Young also offered six suggestions as to how the frozen food industry can assist the warehouseman in reducing handling costs.

1. Bundle, strap or glue small cartons for greater weight per handling operation.
2. Sell at least five cases to the retailer and eliminate split cases and costly break-down operations.
3. Standardize packages or offer one size to the retailer and one size for institutional businesses.
4. Establish adequate transportation facilities for larger area distribution and thus increase volume and reduce unit costs.
5. Mark the product and case size on at least each end of the case for easier identification.
6. Notify warehousemen in advance of incoming truck shipments to avoid dock congestion and costly layovers.—NARW Cold Facts

Brine Cooling and Freezing For Eviscerated Poultry

DATA on time required to cool and to freeze various kinds and sizes of eviscerated, packaged poultry in refrigerated brine, have been obtained in studies conducted by W. B. Esselen and others at the University of Massachusetts, Amherst, and Lyle L. Davis of the Agricultural Marketing Service.

In minus 20 F, calcium chloride brine, hot eviscerated packaged broilers frozen to 15 F in 1½ hours, 12-lb turkeys in 5 hours, 25-lb turkeys in 7 hours. Chilling the same types in the same brine to 40 F. required 6, 35 and 45 minutes respectively. The eviscerated birds were packed warm into bags, vacuumized, and the bags were shrunk by dipping in water at 205 F.

Advantages that may be realized by such a method are minimal handling and minimal contamination before packaging, reduction of costs and elimination of possible loss of flavor from leaching in slush ice — along with the very rapid cooling, and also freezing if the birds are left in the brine until frozen.—TRRF

THERMOBANK
FOR
Ammonia
by KRAMER

THERMOBANK
the defrosting system that makes Ammonia SHINE!

LUCERNE MILK COMPANY, of Los Angeles, Calif., modernized with KRAMER AMMONIA THERMOBANK automatic defrosting system to end years of expensive manual defrosting.

"BEFORE" photo shows iced condition of the old overhead coils.

"AFTER" photo, same room, modernized with KRAMER Ammonia THERMOBANK at minus 25° F; 6400 gallons hardened daily.

INSTALLED BY ASSOCIATED REFRIGERATING ENGINEERS, LOS ANGELES, CALIFORNIA

WRITE NOW FOR BULLETIN TA-182

KRAMER TRENTON CO.
Trenton 5, N.J.

work at a coil temperature of minus 10 F. The specific heat of the mixtures, weights, latent heat removal and absorption capacities.

For example, from the A.S.R.E. Data Book (1946), I note ethyl glycol at a mixture of 38.5 per cent has a freezing point of minus 10 F. In freezing this mixture, do I ignore the ethyl glycol and use the water percentage in arriving at the heat removal to minus 10 F, and in figuring its heat absorption capacity, do I use the water percentage only?

I would like for you to advise which eutectic solution you think has the greatest heat absorption qualities per pound. Also qualities of "Prestone," glycerine and ethyl glycol.—J.Z.K., Balboa, C.Z.

ANSWER: I regret that I do not have any data regarding the specific heats or latent heats of the various glycols. This information seems hard to get. The glycols are made by Carbide and Carbon Chemicals Corp., 30 E. 42nd St., New York 17, N. Y. I have a copy of their literature on the many glycols which they manufacture, but not one word on their thermal properties except their freezing and eutectic temperatures at various concentrations.

The common glycols are ethylene and propylene. There is no ethyl glycol. "Prestone" is ethylene glycol with certain inhibitors added.

I interpret your letter to mean that you are desirous of using a suitable eutectic solution for the purpose of storing refrigeration in some container. The 1946 A.S.R.E. Data Book gives you the information you want as it pertains to Calcium Chloride and Sodium Chloride brines. It would seem as though your formula for determining heat absorption based on water percentage does not hold. The latent of complete solidification of calcium chloride having a specific gravity of 1.08 is only 23.45 Btu per lb., whereas for 1.28 specific gravity it is 55.35 Btu per lb. The first solution starts out with about 91 percent water while the second contains about 71 percent water.

Should you intend to use the glycols to cool and dehydrate air by passing the air through the glycol spray, then you will not need the thermal properties.—H.G.V.

Convert Boiler For Refrigerant Condenser

QUESTION NO. 1024: I just sold a 10x10 Worthington ammonia compressor with a synchronous drive to a cold storage plant. Since I am adding it to about 800 tons already in use, the condenser capacity now in use, which was already inadequate, is further insufficient. In anticipation of further expansion, they would like to have a 500 ton vertical condenser, but I haven't been able to secure such an item.

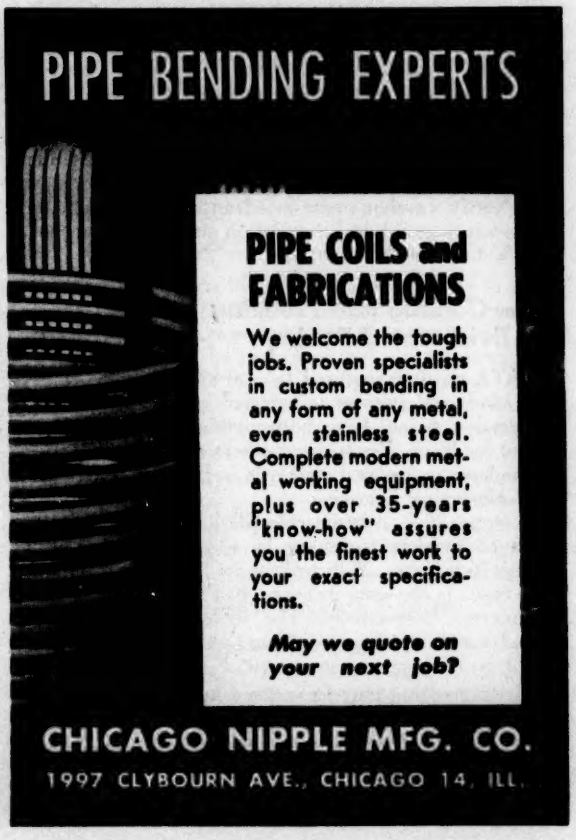
I do know where I can pick up a three hundred hp hrt high pressure steam boiler. Now I am wondering if I might remove the foot section from this boiler and stand it on end, and arrange for the proper inlets and outlets after around a 300 lb. hydrostatic pressure test, and solve my problem. I guess that first, I should know how I am to arrive at the tonnage capacity of this boiler as a condenser. Isn't there some way of calculating capacity by square feet of area exposed to the wash down, water temperature, and ratio of compression?—Harry Drake, Illinois

NOTE. The question above was received by Paul B. Reed, International Educational Director, RSES. Mr. Reed referred the inquiry, and an answer to the Question Box. Not only will this question be of interest to our readers, but the unusual career of the individual requesting this assistance is of considerable merit.

"Dear Gerald: I am enclosing a letter received from one of our RSES members for whom I solicit your help. He is a very remarkable fellow. I don't know just how old he is now but I would guess somewhere around 50. He is totally blind, having lost his eyesight when he was about twenty. Nevertheless, he is a good refrigeration man and does refrigeration work — not just directs it, but does it himself. Perhaps you have met him in some of your travels.

"In addition to installation and servicing of refrigeration equipment, he built

S&S ICE VENDING STATIONS
and Ice Vending Equipment
AUTOMATIC!
REFRIGERATED!
DEPENDABLE!
S&S Frozen Food & Ice Cream
STORAGE DEPOTS
For Independent, Outside Refrigerated Storage! . . . Complete Ready to Plug In! Portable!
Slash distribution costs . . . add frozen food profits for chain stores and super-markets!
Sold by Leading Ice Equipment Distributors Throughout the Nation
S&S VENDING MACHINE COMPANY


PIPE BENDING EXPERTS
PIPE COILS and FABRICATIONS
We welcome the tough jobs. Proven specialists in custom bending in any form of any metal, even stainless steel. Complete modern metal working equipment, plus over 35-years "know-how" assures you the finest work to your exact specifications.
May we quote on your next job?
CHICAGO NIPPLE MFG. CO.
1997 CLYBOURN AVE., CHICAGO 14, ILL.

and operates a locker plant. Moreover he does electrical work and I know that a few years ago he took a contract to wire a number of new houses for, I believe, one of the Government agencies. He did the wiring himself with the help of an apprentice, so he is an unusual man. He has a devoted wife who acts as his eyes. If you are ever around Marshall, Illinois, drop in on him. I know that he would be very glad to meet you and I am sure you would enjoy knowing him."—Paul Reed

ANSWER NO. 1: Your letter of July 27 relates to equipment with which I have had little or no actual experience. Therefore I would hesitate to give you any advice which might be inaccurate and on a job this size, an error would be rather expensive. M. F. Tokach, Vilter Manufacturing Co., felt that it was possible for you to use the 300 hp high pressure steam boiler and convert it to a vertical shell and tube ammonia condenser, provided that it would stand code tests of 250 pounds working pressure or about 300 pounds per square inch test pressure.

Vilter, of course, makes vertical shell and tube ammonia condensers of this size. They ordinarily figure about 10 square feet per ton average for this type of condenser; this area referring, of course, to the outside area of the tubes. Presumably these tubes are about two inches in diameter. He mentioned, also, that generally they work on a 15 F temperature difference between the refrigerant temperature and the outlet water.

In order to get the proper wetting effect, they work on an average of about 2 gpm per tube for a 2 in. tube, never less than 1 gpm and not more than 4 gpm. This applies to vertical shell and tube condensers running 12 to 16 feet high. In converting this boiler, you would have to arrange water rings above the upper ends of the tubes so as to give you the proper swirling action to get the proper heat transfer.

Under separate cover, I am sending a copy of the 1942 edition of the ASRE Data Book. This is not a new edition but the information on condensers is still correct. I think you will find Chapter 19 quite interesting to you in connection with your problem. You will note on page 259 Fig. 5 a typical shell and tube vertical condenser and the chart in Fig. 3 relates to the heat transfer and water flow for 2 and 2½ in. tubes.

I am sending your letter to Professor H. G. Venemann, Purdue University, who is the Educational Chairman, NAPRE. He writes the Questions and Answers column in Industrial Refrigeration. He is an "old timer" who has had many years of experience in ammonia work and with large installations. I am sure that he will write you and give you advice on your present installation.—Paul B. Reed, Milwaukee

ANSWER NO. 2: The references given by our mutual friend, Paul Reed, to page 259, 1942 edition of A.S.R.E. Data Book are very good and contain practically the same material as is in the 1953-54 edition. These ratings were based upon test data published by Frank Zumbro, Frick Company, 1926, on 2 in. tubes 14 ft. long.

The 14 ft. length was adopted by Frick as a standard because very little additional capacity was obtained by the use of 16 or 18 ft. lengths. You will note, for example, in Fig. 4 that the multiplier for a tube 16 ft. long using 2 gpm per tube is 1.216 versus 1.142 for the 14 ft. length. This is an increase of only 6.5 percent in capacity rating whereas it is 14.2 percent increase in tube surface.

Usually a 300 hp hrt boiler would be rated on the basis of 10 sq. ft. per boiler hp, giving you 3000 sq. ft. of tube surface.

A shell and tube vertical condenser 46 in. diameter, containing 227 tubes 2 in. O. D., 14 ft-0 in long, would have 1660 sq. ft. effective surface. Such a condenser using 454 fpm of 85 F water is good for a refrigeration plant of 96.5 tons capacity, if operating at 20 psig suction and 185 psig condensing pressure. For each pound per sq. in. increase in condensing pressure the capacity increases about 2.5 tons. I mention this particular size of condenser because it is about the largest that Frick shows in their catalog.

Should you be fortunate enough to have a bountiful supply of cold water, this condenser will give greater capacity. I will list below the tonnage of this condenser with other water temperatures at same operating conditions.

Water temp., F	65	70	75	80	85
Tons ref.	298	252	204	156	96.5

There are so many variables involved in rating condensers that I would be at a loss to give you anything definite without further data.—H.G.V.

ANSWER NO. 3: My suggestion is DON'T USE that boiler for a condenser. You won't be able to keep the manhole plates tight as the ammonia will eat out the gaskets; and another thing, a lot of boilers have copper ferrules around the outside of the tubes where they are rolled into the heads. Also the heads are not as thick as heads in a condenser. Again, if there are any pits or corrosion in this boiler, it's only fit for junk, with a capital "J".

Even if the tubes were welded on both ends, and the manholes had their plates welded in, I wouldn't use it. A good condenser will save a lot of grief in the long run. It is a darn nice arrangement to have several smaller condensers. This allows one to be cut out for working over. If you have only a big one and it goes flooey, where are you? I know.—Bob Summers, Buffalo

"U" Values For Uninsulated Floors

QUESTION NO. 1025: It has been the practice of the State of Wisconsin to place no insulation in floors placed on a gravel fill on grade (for rooms 25 F. and above). This has caused considerable controversy as to the U value for the heat gain thru the floor.

We know that ASHVE uses a U value of 0.10, yet in refrigeration texts we find for a 6 in. concrete floor with 2 in. of cork, a U value of 0.12, so that of a U of 0.10 cannot be correct. For a 6 in. concrete wall, we also know the U value (U = 0.79).

Can you tell us the U value that you would use to compute the heat gain thru an uninsulated floor on grade?—H.L.O., ME, Bu. Eng., State of Wisconsin.

ANSWER: The Armstrong Cork Company publishes the following U values for concrete floors with no insulation:

2 in. slab, 2 in. finish	0.92
3 in. slab, 3 in. finish	0.79
5 in. slab, 3 in. finish	0.70
6 in. slab, 4 in. finish	0.62
For 6 in. concrete floor with 2 in. of cork	0.12
For 6 in. concrete wall, no insulation	0.79

I do not know where anyone gets the U value of 0.10 unless one assumes an unlimited depth of soil which has an indefinite conductivity value depending upon nature of the soil.

Frequently edge or perimeter losses are used instead of losses through total area, in which case the coefficient is based on Btu per hour (linear foot of exposed edge) (degree difference in temperature between inside and outside air). This coefficient is quoted in the ASHVE Guide at 0.81 for a floor with no edge insulation.

Personally, I would use the above values supplied by Armstrong Cork Co.—H.G.V.

New Questions

Liquid NH_3 Meter?

QUESTION NO. 1025. Is there a meter available for measuring liquid ammonia supplied to an installation for a temperature range of minus 10 to minus 45? What would be an appropriate charge per ton for furnishing ammonia at this temperature to a cold storage tenant?—C. C.

Mechanical Cause For Synchronous Failure

QUESTION NO. 1027. This problem came up at one of our plants. A 10 x 20 inch horizontal double-acting compressor driven by a 175 hp synchronous motor would start O.K. and come up to speed. However, when the exciter was thrown on, the motor slowed down and would not "lock-in". The question of what was wrong turned out to be other than electrical. How many members have had the experience to answer this?—R. A. O'Neil, Texas.

Thermal Expansion Valve Fails Coil Extensions

QUESTION NO. 1028. An existing set of 2-in. pipe coils was increased by adding a set of 1½-inch coils below them. A 5-ton thermal expansion valve was installed leading into the 1½-in. coils. The 1½-in coils are new pipe with welded tube turns on the ends, and they are cut into the 2-in. coils where the liquid line originally entered.

There are two identical set-ups like the above. One set worked fine for a while; then the bottom set would not frost over. It was believed that the power unit on the thermal valve had failed, so the hand expansion valve

sion valve, the bottom set would not frost over.

Enough liquor was then allowed to enter and the bottom set of coils frosted over, but the top set thawed. The hand expansion valve was again opened until both sets of coils frosted over; then the machine (9 x 9 in.) frosted over the cylinders, too. When the expansion valve was cut down to where there was no frost on the machine, one or the other set of coils would thaw and start dripping; the other set of coils operated satisfactorily. A new power unit for the thermal valve has been ordered. Is that the answer?—Henry Black, Texas.

Gauge Glass Coloring

QUESTION NO. 1029. On a large tank where we cool water for air cooling coils is a gauge glass for ammonia level. The ammonia suction lines are connected to the compressors and the feed lines come from the receivers. Now these receivers feed all other ammonia lines and all are interchangeable. The ammonia in receiver glasses has its normal color but that in the water cooler shows green. This glass is a boiler glass with a red stripe running up the length of it. Has this red stripe any bearing on the color or is it the structural qualities of the boiler glass that gives the ammonia a green color?—R. G. S., Buffalo.

Control of Humidity In Cheese Storage

QUESTION NO. 1030. My firm is storing one million pounds of cheese, lightly paraffined at 34 F for a new customer. The storage space has sodium chloride, bare-pipe coils for refrigeration. The humidity of the room is 82 percent and I'm trying to reduce it to a desired 70 rh. What suggestions or experience can the NAPRE members offer? I have tried some calcium chloride desiccant.—H. B., Milwaukee.

Diversified Program Presented At 45th NAPRE Meeting

REFRIGERATION in United States industry is not at all limited to just so many manufacturing processes or commercial enterprises. Officers and national committee chairmen in their reports were explicit in pointing out to the delegates at the 45th Annual NAPRE Convention November 2 to 4, that many new enterprises, and quite a few old ones, were beckoning for the services of the refrigeration engineer. Refrigeration applications in these fields make the industry a more fertile one for NAPRE membership campaigns.

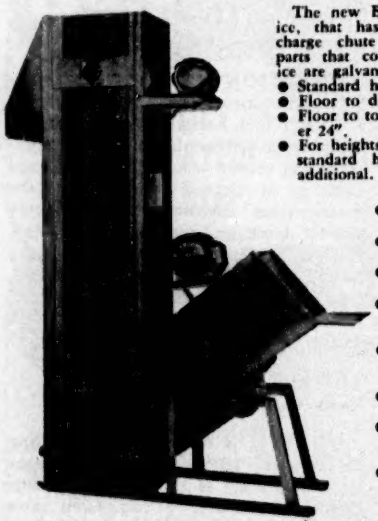
If the delegates didn't have this refrigeration expansion or widening application of the industry firmly implanted in their minds by the business activities of the convention, then the engineering portions of the program certainly confirmed it.

The speakers ranged from among the brewery, meat packing, ice and cold storage industries (refrigeration's earliest fields), to sugar refining, petrochemicals, air conditioning of public buildings, and modern transportation applications of today. Specific talks applying to many fields included insulation, ammonia, centrifugal compressors, humidity measurement and control, safety, insurance, control applications and lubricants.

Opening the educational sessions was Willis F. Hickes, research development engineer of the Foxboro Company, Foxboro, Mass. "The Dewcel" was the topic of Mr. Hickes' paper. He covered the operation of the device, its development and its application, with special emphasis on low

BATEMAN Crushed Ice Elevator

WILL DELIVER APPROX. 10 TONS OF ICE PER HOUR



The new Bateman Elevator conveys ice, that has been crushed, to discharge chute for bagging, etc. All parts that come in contact with the ice are galvanized.

- Standard height 7' 6".
- Floor to discharge chute 72".
- Floor to top of hopper under crusher 24".
- For heights taller than 7' 6" (above standard height) $25.00 per foot additional.

FEATURES:

- V-belt drive from motor to gear box.
- Gears are enclosed and run in grease.
- ½ H.P. motor to drive elevator.
- Top and bottom sprocket shafts run on roller bearings.
- Connecting chains for cups are of steel and galvanized.
- Cups do not ride sides of elevator.
- Take-up slack on chain is outside of housing for easy adjustment.
- At bottom of housing, pull-out pan provides easy cleaning of any left over crushed ice.

The Bateman Elevator can be ordered without crusher, as the Bateman Elevator will work with any crusher.

Price of Elevator, less motor $450.00
Elevator with Monarch Crusher, less motor $685.00
Monarch Crusher takes a one H.P. motor. (Motors at prevailing prices.)

Bateman
Ice Processing Equipment

Write For Full Information

MINERAL WELLS, TEXAS

2 STAGE CONTROL OPERATION WITH 1 MERCOID PRESSURE CONTROL

AVAILABLE IN 17 PRESSURE RANGES FROM

0-30" VAC. TO 300-2500 PSI.

WITH THE SENSITIVITY YOUR APPLICATION REQUIRES

Mercoid DA-400 Series Pressure Controls are dual purpose controls, incorporating a single pressure element operating two separate, independently adjustable Mercoid magnetic switches. The switches may be used for multiple circuit control for various operations as the control responds to pressure changes.

AVAILABLE FOR FOLLOWING OPERATIONS:

SPECIFICATION No. 4122. One circuit opens on increase of pressure—second circuit opens on further increase of pressure.
SPECIFICATION No. 4129. One circuit closes on increase of pressure—second circuit closes on further increase of pressure.
SPECIFICATION No. 4132. Both circuits open at intermediate pressure. One circuit closes on increase of pressure above neutral zone—second circuit closes on decrease in pressure below neutral zone.
SPECIFICATION No. 4123. Both circuits close at intermediate pressure. One circuit opens on increase of pressure above neutral zone—second circuit opens on decrease in pressure below neutral zone.

WRITE FOR BULLETIN NO. 92.

THE MERCOID CORPORATION
4501 BELMONT AVE. CHICAGO 41, ILLINOIS, U.S.A.

H. B. Howe

Wm. V. Richards

Art. J. Naquin

C. D. Drane

F. W. MacDonald

temperature cold storages. Mr. Hickes, a veteran of over a dozen years at Foxboro, and previously with Du-Pont, prepared his talk especially for the operating engineers of cold storages, who had requested the talk through the national educational committee.

Meat Packing Refrigeration

High-pointing the need for operating men keeping fully informed on modern refrigeration techniques that make for efficient plant operation in our ever-changing American economy, H. B. Howe, Chicago, discussed "Good Refrigeration Engineering and Re-Appraisal of Plant Equipment as applied to Modern Food Processing and Storage". Mr. Howe's background was described to the convention attendants as "service mechanic to the refrigeration plant as far back as 1912; designed, built and supervised many ice and cold storage plants during the peak production years of the 1920's; and since that time manager in charge of sales, and now president of Howe Ice Machine Company". He was introduced by E. K. Strahan. Strahan was the deputy who organized the New Orleans chapter.

Automatic Controls

"Some Useful Applications of Automatic Controls," was the topic of the talk given by perhaps one of the youngest engineers appearing before the convention. He was William V. Richards, chief engineer of H. A. Phillips Company, Chicago. Mr. Richards, a graduate in mechanical engineering of Northwestern University, joined the Phillips staff in 1948 at Los Angeles where he became an NAPRE member. Prior to that time he had spent two years in the Navy as chief engineer, and later executive officer of an LST.

Mr. Richards' talk was unique by reason that he had three other engineers contribute to the discussion. He said the description of refrigeration equipment used to modernize the Pilsen Brewing Company of Chicago, was written by R. A. Klockner, Vilter Sales Construction Co., Chi-

OHIO SPECIAL ICE CANS

WELDED — RIVETED

ICE CAN GRIDS

Industrial Trucks and Trailers

THE OHIO GALVANIZING & MFG CO.
NILES OHIO

A Phillips No. 300 Float Valve is furnished as standard equipment on this Damrow "Cold-Zone" Refrigerated Wall Tank.
PHILLIPS
FLOAT CONTROLS

STANDARD with the FINEST in REFRIGERATION

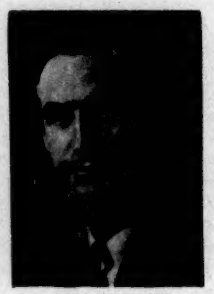
With refrigeration manufacturers whose products are famed for quality and dependability, Phillips Controls are standard equipment. On new or older equipment, Phillips Controls bring greater efficiency, more dependable performance. Capacities range from 1 to 1,000 tons for Freon, from 1 to 2,000 tons for ammonia. Full information and engineering advice gladly given.

SERIES 300 PHILLIPS FLOAT CONTROLS
- SERVICEABLE — No "pump-down" needed to inspect or renew cartridge.
- ADAPTABLE—for most types of flooded evaporators.
- COMPACT—Mounts directly on surge drum.
- IDEAL for storage tanks, air and water coolers, ice builders and other "packaged" units.

WRITE FOR CATALOG

For Dependable Operation on New Equipment or for Replacement, Specify Phillips.

H. A. PHILLIPS & CO. Designers and Engineers Refrigeration Controls Systems
3255 W. Carroll Avenue • Chicago 24, Illinois
REPRESENTATIVES: The C & S Equipment Co. 2103 S. San Pedro Street, Los Angeles, California
Mason Emanuels Co. • 1000 Fourth Avenue South, Seattle 4, Wash.



Cary B. Gamble

Allan W. Cox

Harry M. Shedd

Alfred Lippman

Geo. W. Gleim

cago, for presentation to the delegates as an example of refrigerant control application. Another case history was furnished by Bill Frank Mollenberg-Betz Machine Co. (Frick Factors), Buffalo, N. Y., concerning a poultry freezing operation utilizing Freon-12, reciprocating compressors, evaporative condensers, flooded bunker coils and reverse cycle defrosting. The speaker presented Frank's remarks to the delegates, pointing out that operating information given had been gathered as late as mid October in order to give the delegates an up to the minute account.

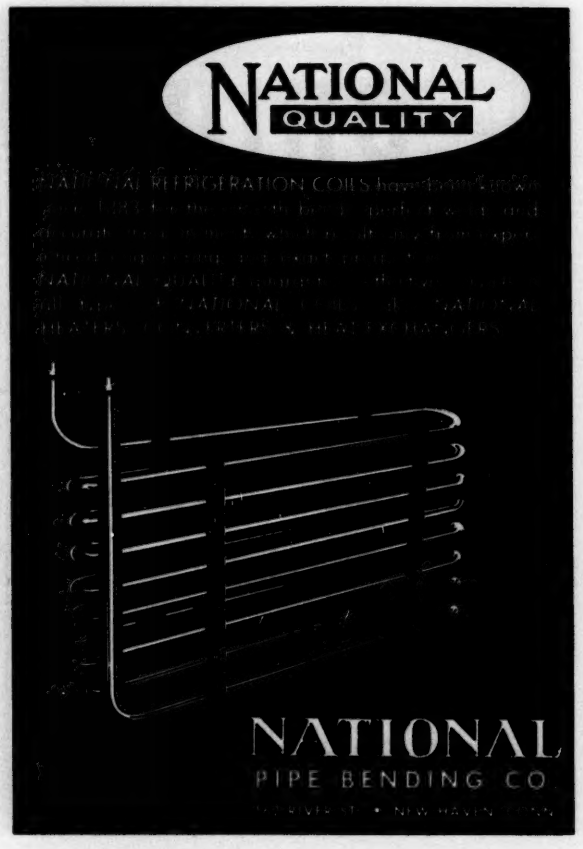
The third application described by the speaker was based on information given him by George Weich, E. L. Nickell Co., Chicago, Ill., and had to do with time clock defrosting with hot ammonia gas in an up-state New York meat packing plant. In each case history Richards described the problem, gave reasons for the equipment selection and explained what was accomplished with the controls. He illustrated his remarks with the use of slides.

Safety and Insurance

Two safety speakers shared one engineering session. Arthur J. Naquin, safety counselor, New Orleans Public Service, Inc., reviewed the impact World War II had on industrial accident prevention in this country; the gains that have been made in preventing occupational injuries; and the change in duties and responsibilities given safety directors in recent years. He discussed the trend of their thinking relative to the term "accident"; activities which tend to permit every company member to participate in a company-wide safety program; the change in safety poster and safety film philosophy, and the growth of formal accident prevention groups.

Mr. Naquin, born in Denison, Texas, was an engineering graduate of Tulane University in 1924 and worked for two years as a test engineer for General Electric Company. He joined New Orleans Public Service in 1926. When his firm created a safety department in 1941, he was

ICE-A-TERIA
ICE VENDORS
FOR EVERY
REQUIREMENT
Ice-A-teria will vend block or bag ice 24 hours a day for those extra SALES!
See this Perfection machine in action at the National Convention, Cincinnati, Nov. 9-12th, BOOTH No. 10.
It will pay you to attend this great Ice Convention . . . It will pay you to see this Perfection equipment.
Perfection
SCORING MACHINE PARTS AVAILABLE FOR IMMEDIATE DELIVERY
P.O. Box 2140, Fort Worth, Texas



placed in charge as the company's safety counselor. He has been quite active in trade and civic association work, is a member of the Engineers Club in New Orleans, Louisiana Engineering Society, American Society of Safety Engineers and the National Safety Council.

Practical Refrigeration

"Practical Refrigeration and Its Insurance Service", was the title of the second safety paper delivered by C. D. Drane, engineering department supervisor of the Fidelity and Casualty Company of New York. Mr. Drane is a native of Pittsburgh, with 19 years practical and inspection experience in the pressure vessels field. He is a member of the American Welding Society and ASME, with All States Commissions in the National Board of Boiler and Pressure Vessels Inspectors.

Mr. Drane's presentation covered boiler and machinery insurance, its scope, purpose and relation to practical refrigeration, with a brief summary of use and occupancy and consequential damage insurance; the necessity of inspection and maintenance with loss prevention as the end result; a review of accidents with discussion pointing out, causes, contamination, de-contamination and results; the mutual advantages of closer cooperation between insurer and insured.

Sanitary Ice Making

The development, treatment and storage of water to be used in the manufacture of ice was covered in "Sanitary Practices in Manufacturing Ice". Cross-connections between drinking water supplies and unsafe supplies that are often found in ice plants were illustrated by means of sketches. Discussion covered the maintenance of brine tanks, can fillers and core suckers. The difficulties encountered in producing a block of ice free from contamination was emphasized, including the storage and distribution of ice.

The speaker on the foregoing subject was Professor F. W. MacDonald, Doctor of Public Health, Tulane University. He is also a Master in Civil Engineering. Prior to his nine years in the Schools of Medicine and Engineering of Tulane University as an instructor, he had six years in the Sanitary Engineering Division of the Louisiana State Department of Health and three years with the United States Public Health Services.

Air Distribution

Cary B. Gamble, consulting engineer, New Orleans, presented a paper on "High Velocity Air Distribution". In the discussion, he covered the application of the high velocity system, the reasons for its use, its advantages, the type of control, etc. He pointed out the extreme flexibility of this type of system, its inherent advantages and disadvantages. A general discussion and specific questions followed.

Mr. Gamble entered the refrigeration field in 1926 as a distributor for Frigidaire in Roanoke, Virginia. Since 1934 he has headed a firm of consulting engineers under his own name and has handled numerous engineering and air conditioning projects throughout the south. He is a member of NAPRE, ASH&VE, ASRE, ASME, AIEE, Louisiana Engineering Society and others.

Low Temperature Construction

"Problems Frequently Experienced in Low Temperature Insulation" was the topic of discussion by Allan W. Cox, low temperature insulation sales manager, Owens-Corning Fiberglas Corporation, Toledo. His address included a discussion of frost heaving with on-grade freezer floors, vapor barriers and interior finishes. A 17-minute, sound and color film was shown illustrating construction of a one story, 500,000 cubic foot minus 15 F tilt-up concrete wall cold storage freezer in Pajaro Valley, Calif.

Mr. Cox is an associate member of NAPRE, ASRE and NARW. He is very active in all three organizations. Prior to his affiliation at Owens-Corning he was for more than 16 years associated with Cork Insulation Company, Inc.

Centrifugal Compression of Ammonia

An exceptionally interesting talk was presented on "Centrifugal Compression of Ammonia" by Harry M. Shedd of the Dallas office, Carrier Corp. Mr. Shedd, a mechanical engineering graduate of the University of Kentucky, served in that firm's international division from 1937 to 1942, representing the firm in Santiago, Chile and in the Canal Zone. He returned to Carrier Corporation in Syracuse in late 1942 and assumed application engineering responsibility for the then newly established Air and Gas Compressor Division. In 1945, he transferred to Carrier District office in Dallas, Texas, as air and gas compressor specialist as well as industrial refrigeration applications. From 1945 to present the majority of his work has centered around the petroleum and petrochemical fields.

"The Centrifugal Compression of Ammonia" briefly describes evolution of centrifugal compressors, compares characteristics of centrifugals used for ammonia with those used for Freon-11, indicates practical capacity limits for centrifugal ammonia compression on refrigeration applications, covers a typical centrifugal ammonia refrigeration cycle, describes existing U. S. installations, and special compressor construction and installation considerations.

WAKE UP SLUGGISH EVAPORATORS WITH A

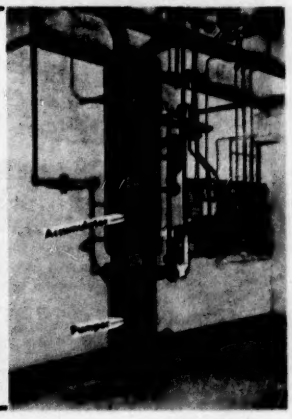
Watkins RECIRCULATOR

(PATENTED)

● TIME TO INSTALL a Watkins! Forces all evaporators to maximum efficiency with complete full-flooding. Refrigerant drives through the coil, washing out oil, thus giving maximum heat transfer. Watkins recirculates excess cold liquid to evaporators; protects compressor from slugs; permits fast hot-gas defrosting. No need for mechanical pumps or surge drums. THREE-YEAR WARRANTY ON ALL PARTS EXCEPT INDICATOR BULBS.

Write for Bulletin and Prices

J. E. WATKINS CO.—307-A LAKE ST.—MAYWOOD, ILLINOIS



Field Trip

Host to the field trip made by the delegates to Godchaux Sugars, Inc. of Reserve, Louisiana, was Alfred Lippman, Jr., the plant manager. Mr. Lippman, another Tulane graduate, has had experience with chemical engineering firms since 1929 and became plant manager for Godchaux early in 1954. He is a member of American Institute of Chemical Engineers, American Chemical Society and is a registered professional engineer. He and his staff not only arranged conducted tours through the refinery for the benefit of the delegates, but explained in great detail the manufacturing process involved and elaborated on the uses of refrigeration in connection with both processing and storage of sugar in bulk quantities.

Other Speakers

Other speakers scheduled were George W. Gleim, Sales Engineer, Esso Standard Oil Co. (N.Y.) on the topic of "Practical Lubrication for Refrigeration Plants", and Fred C. Barton, Consulting Engineer, Indianapolis, the designer of the heat pump system installed in the Empire Life Insurance Building in his city. C. B. Schaeffner, Chief Engineer and Fred W. Pardoe, Refrigeration Engineer, Ingall's Shipbuilding Corporation, were to discuss construction of two U.S. Navy refrigerated stores vessels. At convention time, clearance was still awaited on security classifications recently attached to these vessels.

New Ice Distributor

THE distribution of ice in the Mt. Vernon Illinois area, formerly handled by the Consumers Ice Co. a subsidiary of Starr Bros. organization, has been taken over by King City Ice Company. Galen Dougherty a former employee as owner-manager.

Delta States Convention

THE ANNUAL convention of the Delta States Ice Association to be held at the Buena Vista Hotel, Biloxi, Miss. December 6 to 7 will center its program on practical subjects including: automatic controls and gadgets, merchandising ice the modern way, tax problems, national outlook and engineering safety. There will also be inspirational addresses by nationally famous speakers.

The entertainment will consist of the president's cocktail party, luncheon and bingo party for the ladies, and a seafood jamboree with floor show and dance.

The Hurricane Room of the Buena Vista is a natural for exhibits. The latest models of ice using equipment and appliances will be there on display. Associate member representatives will be on hand to keep members abreast of their products and services.

Oklahoma Ice Plant Sold

ONE of the oldest business establishments in Chandler, Okla. changed hands when the Chandler Ice Company was sold to Glen R. Key, Chandler oilman. The purchase was made from Earl Emrick and Gene Baker. An expansion of the plant is planned by Key, which will include an uptown self-service dock and cold storage facilities for the handling of hogs, beef and other meat products. Plans call for a new freezing capacity of 25 tons of ice daily. The plant has been owned and operated by Emrick and Baker for eight years.

Ice Plant Sold

THE DAYTON Creamery and Ice Works, Dayton, Wash. has been purchased by John Carson, Waitsburg, from Gustav Hansen. Mr. Hansen has been in business in Dayton since 1917.

Florida Ice Association Annual Convention

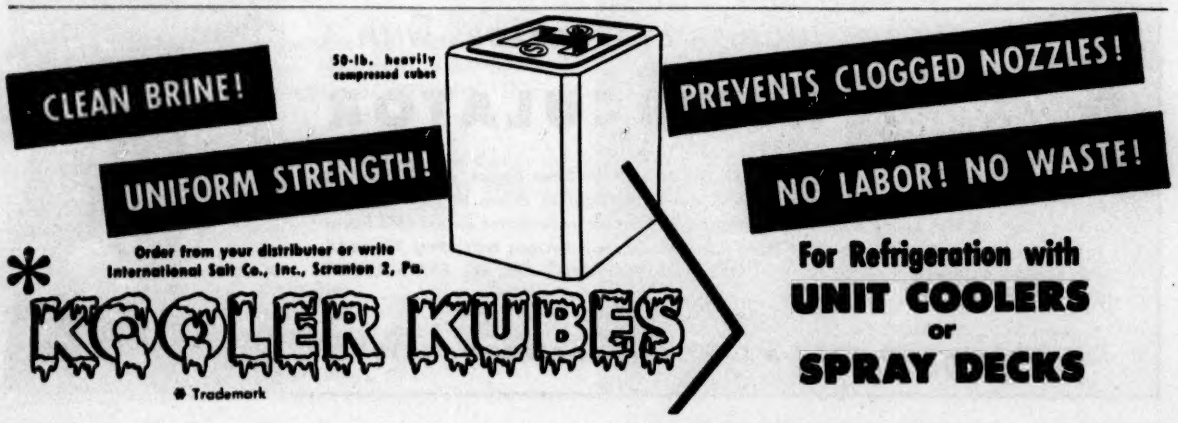
THE 29th annual convention of the Florida Ice Association will be held at the Columbus Hotel, Miami, Fla. November 21-23. The business sessions will be short, but with new ideas and today's approach to old problems. It will include a forum, at which modern trends in the ice industry will be discussed by men who have been outstandingly successful in some new money-making or money-saving activity. A bountiful entertainment program is being planned, to include a welcome party, sponsored by the Miami ice industry to be held Monday evening, and the final closing luncheon at noon Wednesday.

Florrid Resigns as Georgia Secretary

THE resignation of R. W. Florrid as secretary-treasurer has been accepted with regret by the board of directors of the Georgia Ice Manufacturers Association. Mr. Florrid is leaving to become administrator of the Austell Hospital, Augusta, Ga. To fill the vacancy the board has appointed Mrs. Mildred Nichols, who has been director of the Modern Ice Center in Atlanta. She remains head of the Modern Ice Center on a reduced basis and will devote half time to the association.

Heat Transfer Reduced

THE University of Utah, Salt Lake City, reports that research indicates that filling concrete blocks with vermiculite insulation cuts heat transfer 50 per cent. In the construction of heated buildings and cold storage plants, vermiculite in the cores of concrete-block walls could materially reduce the size of the heating or cooling plants, engineers for the university have reported.



Ice on Television

(Continued from page 16)

purposes for which art-in-frozen-form is employed for decorative and novelty purposes by restaurants, hotels and sponsors of private parties.

In his closing remarks, Announcer Kennedy told the television audience: "Lest we create the impression that the Union Ice Company manufactures only ice let's pause a moment to examine some of the lesser known activities of these organizations. Activities not located at this (Los Angeles) plant but carried on in many different locations all over the state of California. Such things as hydro-cooling of fruits and vegetables to remove field heat and consequently demand less ice during shipment, frozen food lockers, and cold storage facilities for wholesale quantities of food. Anyone familiar with the industrial and development of our community will readily agree that one of the mainstays of that development was Union Ice Company. It will continue to be one of our best Success Stories, linked closely with the romantic success story of our own west, which it has served so well and faithfully for 72 years."

The Union Ice Company's San Francisco activities were presented on the Richfield Oil Corp. "Success Story" program over Station KSO-TV, San Francisco, on June 8, with executives of the San Francisco staff participating in the presentation.

Book Review

STEAM, AIR, AND GAS POWER, Fifth Edition. By William H. Severns, Howard E. Degler, John C. Miles. Published by John Wiley & Sons Inc., New York. Illustrated. 502 pages. Price $6.50. For sale by Nickerson & Collins, Chicago, Ill.

This fifth edition is an extensive revision with up-to-date information which provides a textbook suitable for basic courses in heat-power theory, practice and equipment. Most chapters have been rewritten and include many new diagrams, illustrations, examples, and problems, and answers are given to some problems. Of special significance are new chapters dealing with gas turbine and mechanical refrigeration. First issued in 1929, this edition follows the established logical arrangement, except that emphasis of the discussion has been shifted to well-established trends in current engineering practice.

Processed Egg Production

LIQUID egg production during August totaled 12,336,000 lbs., compared with 12,735,000 lbs. in August last year and the 1948-52 average of 22,386,000 lbs. The quantity used for immediate consumption and drying was larger than a year ago. The quantity used for freezing was smaller. Dried egg (egg solids) production totaled 1,215,000 lbs., compared with 1,979,000 lbs. in August a year ago and the average production of 3,343,000 lbs. Frozen egg production during August totaled 8,107,000 lbs., compared with 9,709,000 lbs. in August last year and the average of 9,768,000 lbs. Frozen egg stocks decreased 20 million lbs. in August, compared with 19 million lbs. in August last year an average decrease of 19 million lbs. This was reported by the Agricultural Marketing Service of The Department of Agriculture.

New Dry Ice Plant

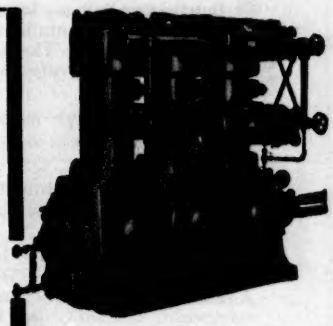
A PROPOSED dry ice plant to be built at Lawrence, Kansas this fall by the Westvaco Chemical division will have a daily capacity of 60 tons and cost more than $500,000.

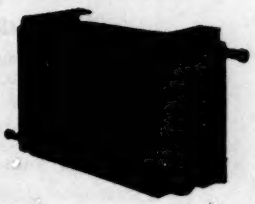
The Case of the Dead Giveaways!

By HOWE . . . THE WORLD'S CHILLER

Business seemed good, but John Q. Engineer was worried. Something was missing . . . namely profits! He called in a Howe "private eye" who went quickly to work and later sent in this report: "The culprit gave himself away. Variable temperatures and humidities were exposed, caused by the obsolete inefficient refrigeration system. Dead giveaways!"

And now? John Q. has new Howe tested equipment. Gives him *exact* temperatures and humidity at *all* times. Better production, risk of spoilage cut to the bone. Product perfection through controlled refrigeration make John Q.'s profits *real*. Departing for his next case, the Howe "private eye" said, "Your new Howe will keep running longer, with less trouble. Over 42 years' specialization does the trick."

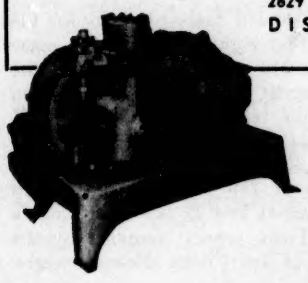




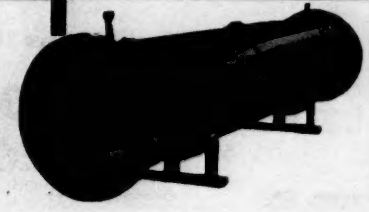
HOWE ICE MACHINE CO.

2829 Montrose Ave., Chicago 18, Ill., • Cable: HIMCO, Chicago

DISTRIBUTORS IN PRINCIPAL CITIES



CONSULT HOWE on all your refrigeration problems. Since 1912 manufacturers of ammonia compressors, condensers, fin coils, locker freezing units, air conditioning (cooling) equipment. Immediate delivery!



Freeze Out HIGH REFRIGERATION COSTS!

USE BARRETT® BRAND

Anhydrous Ammonia

GET: ● **Lower Operating Costs!**

● **Outstanding Delivery Service!**—high speed delivery! Cylinder stocks maintained at all our coast-to-coast distribution stations. There is one near you ready to fill your needs *promptly* and *regularly*. 150, 100 and 50-lb. cylinders.

● **Outstanding Purity!**—no free non-condensable gases to cut down efficiency, or other impurities to corrode equipment.

● **Extremely Low Moisture!**—doesn't freeze up expansion valves, corrode equipment or ice up in evaporators.

Operating costs are lower because you get more refrigeration per pound of Barrett Brand Anhydrous Ammonia than from a pound of any other type of refrigerant commonly used in food lockers, ice plants, cold storage and industrial cooling processes—all at a lower cost per pound for Ammonia. Order a trial shipment of 150, 100 or 50-lb. cylinders today!

GET THIS VALUABLE HELP!

☐ Please send your FREE Ammonia Leak Detector Kit. (Pocket size, this handy kit can be used over and over again.)

☐ Please have your specially trained Ammonia Technical Serviceman call, discuss the economical use, etc. of Anhydrous Ammonia. No obligation.

☐ Please send your valuable handbook, "Guide to use of Barrett Brand Cylinder Ammonia." (Shows most economical usage; contains chemical properties, handling, charts, etc.)

First In Ammonia Since 1890

NITROGEN DIVISION
ALLIED CHEMICAL & DYE CORPORATION
40 Rector Street, New York 6, N. Y.
Ironton, Ohio • Orange, Texas • Omaha, Nebraska

Frozen Beer Offered British Drinkers

REPORTS from London say that British scientists have been successful in freeze-concentrating beer and that it has appeared in some pubs in frozen concentrated form. Food experts in Britain's department of scientific and industrial research said that only the bitter beers lose a touch of their flavor, but that this can be restored. The consumer reconstitutes his beer by adding soda water to the concentrate.

Although at present a "cloud no larger than a man's hand," this new product could destroy even more alcoholic beverage business for taverns, clubs, and restaurants, says The Beverage Traffic News. The big appeal of the frozen beer would be its lower price. Housewives won't do their own mixing unless it is cheaper.

From the reports of the British, it seems that the brewer might be able to offer a lower price on the frozen beer because of cheaper transportation costs. The beer can be freeze-concentrated from a third to a fifth of its original bulk. While this news may have conscious meaning for on-premises retailers, alcoholic beverage dealers such as package stores, drug stores, and groceries, can look forward to a new product with unusual merchandising possibilities. At any rate, for better or worse, the news article continues, frozen beer can be expected to join the list of products to be stacked on retail store shelves before too very long.

Purchases of Dairy Products Decline

PRICE support purchases of dairy products during the first six months of the 1954-55 marketing year (April-September) show an overall decrease of more than 13 percent from purchases during the same period of a year earlier, the U. S. Department of Agriculture reported in making its monthly summary of dairy price support purchases and sales during September 1954.

Dairy price support activity in September 1954 was marked by the discontinuance of butter purchasing on September 17 after several months of continuous daily purchasing, and by the sale of 1,593,085 pounds of butter into domestic trade channels during the last ten days of the month.

Price support purchases of 3,077,061 pounds of butter, 12,686,390 pounds of cheddar cheese, and 26,568,099 pounds of nonfat dry milk during September 1954 are in contrast with purchases of 4,921,639 pounds of butter, 24,072,068 pounds of cheese, and 34,839,781 pounds of nonfat dry milk during September 1953. In addition to the regular price support purchases of nonfat dry milk listed above for September 1954, the USDA also purchased 24,072,068 pounds packed in small-sized containers for delivery during the next several months for domestic school lunch and welfare use.

Ice Cream Sales

SALES of ice ceam and related dairy products for the first four months in 1954 compared with the same period in 1953 showed a 2.86 percent increase in the United States, and 1.40 percent decrease in the Dominion of Canada, according to the reports received from 761 ice cream plants. These plants had an annual sales volume in 1953 totaling 336,353,172 gallons. This index is the summary of the sales of 719 plants in the United States with 322,339,547 gallons and 42 plants in Canada with 14,013,625 gallons. From report compiled by the International Association of Ice Cream Manufacturers.

Storage of Irradiated Potatoes

WORK reported by A. H. Sparrow and E. Christensen, conducted at Brookhaven National Laboratory, Upton, N.Y. under AEC asupices, indicates that moderate dosage of radiation may be beneficial to white potatoes stored at 40 to 45 F. They stored samples of Katahdin potatoes at this temperature for 18 months; some samples had been irradiated at high and some at lower dosages. A tasting panel preferred irradiated samples over the unirradiated after 8 months. Sprouting was reduced at lower dosages. At 20,000 r (an intermediate level), and at higher dosages, sprouting was prevented. With 20,000 r, the potatoes remained firm, whereas at higher and lower levels, they softened. Vitamin values were not determined, and it is probable, as Proctor and O'Meara have shown for orange juice, that high dosages many reduce vitamin content. The results look promising but more work will be needed, it was concluded.—TRRF.

New Frozen Foods Plant and Merger

THE Montgomery Frozen Foods Company, 215 East Jefferson Street, Montgomery, Ala., will build a 40,000 square foot frozen food and locker warehouse on a large industrial lot with special loading facilities for trucks, according to Joe Fiveash, president. He also announced a merger of the Montgomery Frozen Foods Company, Inc., with the Capitol Fish Company of Atlanta, Georgia, which will make the merged groups one of the largest distributors of frozen foods in the South.

COMING CONVENTIONS

NATIONAL ASSOCIATION PRACTICAL REFRIGERATING ENGINEERS
November 2-4, 1954
Roosevelt Hotel, New Orleans, La.
J. RICHARD KELAHAN, Secretary

CANADIAN ASSOCIATION OF ICE INDUSTRIES
November 2-3, 1954
Sheraton-Brock Hotel, Niagara Falls, Ontario
MRS. MILDRED CROFT, Exec-Secy.

NATIONAL ASSOCIATION ICE INDUSTRIES
November 9-12, 1954
Netherlands-Plaza Hotel, Cincinnati, Ohio
GUY W. JACOBS, Executive Secretary

FLORIDA ICE ASSOCIATION
November 21-23, 1954
Columbus Hotel, Miami, Fla.
MURIEL WASHBURN, Secretary

NATIONAL EXPOSITION OF POWER AND MECHANICAL ENGINFERING
December 2-7, 1954
Commercial Museum & Convention Hall, Phila., Pa.
E. K. STEVENS, Manager

DELTA STATES ICE ASSOCIATION
December 5-7, 1954
Buena Vista Hotel, Biloxi, Miss.
R. N. MILLING, Secretary

HEATING AND VENTILATING EXPOSITION
January 24-28, 1955
Commercial Museum & Convention Hall, Phila., Pa.
E. K. STEVENS, Manager

AMERICAN WAREHOUSEMEN'S ASSOCIATION
April 12-16, 1955
Edgewater Beach Hotel, Chicago, Ill.
WM. K. DALTON, General Secretary

Prevent
COLD ROOM LOSS

with . . .
AIR-LEC DOOR OPERATORS

Air-Lec, shown installed above the cooler door, opens and closes the heaviest doors quickly, safely and smoothly at the touch of a switch or the light pull of a cord. Available with Mechanical Trip for one or two operating stations above each door approach, or with Electrical Switch for more and distant stations. Air-Lecs are in use in thousands of factories, food freezing and storage plants, meat packing companies, garages and service stations. Speed and Safety are characteristic of Air-Lec because Air-Inertia-Spring, all elastic forces, are the patented forces used.

AIR-LEC FOR TYPICAL COOLER DOOR. . **$65.00**

. . . AND AIR SEAL

Installed at left of door in illustration, the Air Seal operates in conjunction with Air-Lec, to provide an absolute seal on cooler doors. Air Seal crowds the outer edge of the door to stop improper circulation and frosting. Air Seal is especially desirable where temperatures below freezing are maintained.

AIR-SEAL. $25.00

NOTE HOW THEY RE-ORDERED AIR-LECS

	Recently Ordered	Now Enjoy
California Consumers Corp. Los Angeles, Calif.	1	5
Pan American Foods, Inc. Brownsville, Texas	2	8
Beare Ice & Coal Co. Jackson, Tenn.	1	4
Clinton Foods Inc. Auburndale, Florida	1	5

Fill in and return the coupon today for complete information.

SCHOELKOPF MFG. CO., Madison. Wis.
Cooler Doors are ___ Ft. Wide, ___ Ft. High. Air Pressure ___
Open Toward Warm Side. Cold Side.
Firm Name .....
Address .....
By .....

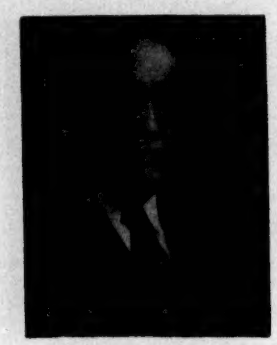
SCHOELKOPF MANUFACTURING CO.
312 N. THIRD ST., MADISON 4, WIS.

DEATHS

J. Vincent Jamison

AS ANNOUNCED briefly in the October INDUSTRIAL REFRIGERATION, the death of J. Vincent Jamison occurred August 28 at his home in Hagerstown, Md. He was 69. Mr. Jamison was chairman of the Jamison Cold Storage Door Company, Hagerstown.

With his father, R. E. Jones and eight others, he was co-founder of the Jones Cold Store Door Company in Hagerstown. In 1914 the name of



J. Vincent Jamison

this firm was changed to Jamison Cold Storage Door Company. He was manager of the company, then secretary-treasurer and finally general manager. He was elected president in 1921 and continued in this office until his appointment as chairman of the board in 1941. He was the oldest member of the company's 30-year club.

A native of Luray, Va., Mr. Jamison was a lifetime member of the American Society of Refrigeration Engineers. He was also quite active in organized baseball, community life and politics.

WILLIAM B. JOHNSON, a former resident of New York City, who retired in 1948 as vice-president of the American Ice Company, died September 22, at his home in Branford, Conn. He was 71. Mr. Johnson was with the company for 50 years, starting as an office boy. He served as general sales manager before becoming vice-president.

GEORGE W. LEONARD who helped to organize the Lexington Ice & Coal Company, Lexington, N. C. and worked with it for 40 years before retiring in 1953 died October 1, at a Lexington hospital. He was 71.

CLAYTON MOODY owner of ice plants at Bald Knob, Judsonia and Bradford, Arkansas, died September 8. He was 58 years old and a veteran of World War I.

THOMAS C. WATTS, active in the ice and cold storage business in Jasper, Ind. for many years died at the home of his daughter, Mrs. R. J. Rivers, Jacksonville, Fla. He was 80.

News of People

JOHN KEOGH of Buffalo, N. Y. will take over the job of Assistant Director of Storage, Distribution and Disposal in the Office of the Assistant Secretary of Defense for Supply and Logistics, on Monday, September 13. He will serve as Assistant to the present Director, A. B. Drake. Mr. Keogh has been a member of the American Warehousemen's Association for a number of years and has served the industry in various leadership capacities. He recently resigned as President of Buffalo Merchandise Warehouses, Inc., but has maintained his connection with that firm as a vice-president and consultant. He is a member of the Board of Directors of the American Chain of Warehouses, and was formerly president of Interlake Terminals.

LEE CAMPBELL has been appointed Merchandising Director for the Institute of American Poultry Industries as announced by Dr. Cliff D. Carpenter, president of the Institute. Mr. Campbell returned to the Institute as a full time staff member on duties as merchandising director, he will continue to manage the exhibits September 1. In addition to his new held in connection with the Institute's annual Fact Finding Conference, as he has for the past six years.

DR. SAMUEL C. PRESCOTT, chairman of the Board of The Refrigeration Research Foundation, and retired faculty member of The Massachusetts Institute of Technology, has lately devoted has talents to the writing of a history "When MIT was Boston Tech., 1861-1916". It is the story of the Institute from its beginning until it crossed the Charles River to its present location. Dr. Prescott, well known in the field of science and more recently in association work, now enters another phase of his busy life, as a writer of history.

ROBERT F. MOSSBERG has been appointed manager of the Merchants Refrigerating Co. warehouse on Fuhrmann Blvd. Buffalo, N. Y. He joined the company in 1945 as a member of the sales staff. Dennis C. Liles continues as manager of the firm's other Buffalo warehouse on Columbia St.

LELAND KENAGY, on October 1, became chief engineer of Railways Ice & Service Company, Kansas City plants located at Argentine and Armourdale. Kenagy will make his headquarters at the Argentine plant. He is national treasurer of NAPRE.

FIRE BAN

INSULATION FINISH

FOR CORKBOARD, "FOAMGLAS", "STYROFOAM", "ROCKCORK", "FIBERGLAS", "RUBATEX", etc.

OVER WALLS & CEILINGS IN COLD ROOMS, DUCT & PIPE INSULATION, TANK INSULATION ANYWHERE A *TIME TESTED, LOW COST* INSULATION SURFACING IS REQUIRED.

- APPLIED IN ONE COAT
- MONOLITHIC — NO SCORING
- WHITE & 12 COLORS
- UNDERWRITERS LABEL
- INHIBITS MOLD GROWTH
- INTERIOR OR EXTERIOR
- LIGHT WEIGHT
- PERMANENT
- APPLICATION AT 0° & ABOVE
- TEMPERATURE RANGE −100 to +300 F
- ABRASION RESISTANT
- ECONOMICAL

AVAILABLE THRU YOUR INSULATION CONTRACTORS—WRITE FOR SAMPLES, PRICES & BULLETIN NO. 54

GOOD EXCLUSIVE — DISTRIBUTORS FOR AVAILABLE TERRITORIES WANTED.

O'NEILL FLOORS

Sole Manufacturers

E. H. O'NEILL FLOORS CO., 2525 SOUTH 50TH AVENUE, CICERO, ILLINOIS

New Freon Refrigerant Provides Wider Application in Industry

A NEW refrigerant, Freon-13 (monochlorotrifluoromethane) nonflammable and nonexplosive, designed for systems producing temperatures in the range of minus 70 F to minus 150 F is finding wider application in many types of metal treatment, chemical processing and testing work.

Big advantage of "Freon-13", it is claimed, is its adaptability to use in compact, economical hermetic-type compressors in very low temperature applications. Early equipment for cooling to minus 150 F. used ethylene or ethane, both of which are flammable and explosive and required more expensive and space-consuming "open type" equipment.

Workman removes shrunken bushings from freezer tunnel to place in roller units. Photo from Caterpillar Tractor.

The excellent chemical stability of "Freon-13" and the fact it is non-corrosive with metals and other components of conventional refrigeration equipment makes its use in existing equipment relatively simple. Compressors designed for use of "Freon-12" dichlorodifluoromethane have been adapted to "Freon-13", with the "Freon-13" requiring approximately the same compressor displacement at minus 100 F. as is required for "Freon-12" at 0 F.

Low Temperatures Achieved

Although temperatures as low as minus 459°F, just above absolute zero, have been achieved in low temperature (cryogenic) research laboratories, refrigeration systems utilizing "Freon-13" would fill the bulk of industry's current low-temperature requirements. Typical applications include metal toughening, chemical and pharmaceutical processing, aging of steel, shrink fitting of metals, and most types of low-temperature aircraft testing work.

For example, bushings used in track rollers are key parts in the manufacture of crawler tractors. Until recently, Caterpillar Tractor Co., Peoria, Illinois, used two-piece bushings that required several separate operations to assemble. New, with the help of low-temperature refrigeration, they have streamlined this operation with considerable savings in man-hours and per-unit cost.

Metal Shrink Fitting Using Cascade System

The composite bushings previously used consisted of an outer member of cast iron and an inner bushing of bronze. The two parts had to be pressed together, then drilled, reamed, and fitted with pins to prevent any rotary motion between them. A new process—in which bushings are shrunk by chilling and then expansion-fitted—eliminates all these laborious operations.

Now, one-piece bushings of special alloy aluminum are fed into a Webber Low Temperature Industrial Freezer and pass through it on tracks. (See Fig. 1). Within the freezer, "Freon-22" monochlorodifluoromethane is used to chill a condenser containing "Freon-13" monochlorotrifluoromethane which in turn chills the parts. Bushings are brought from room temperature to approximately minus 100 F in 6½ minutes.

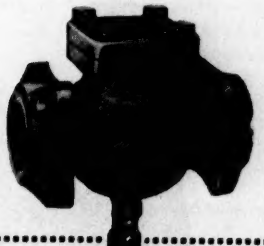
AMMONIA VALVES

Wolf-Linde

THE STANDARD OF QUALITY SINCE 1880

WOLF-LINDE SCREW END VALVES, of high-strength semi-steel, offer in Type I, threaded bonnets with 1-piece hardened and ground stems. Sizes range up to and including 1" IPS.

SCREW END, TYPE II valves have bolted bonnets, with disc held to stem by a positive locking pin. Sizes: 1-¼" IPS and up . . . flanged valves 1" IPS and up.



SQUARE FLANGED check valves come in standard sizes, 1 to 4 inches, in both angle and straight-way styles. Round flanged style, 5" and up on application. Screw ends are available from ½" to 2".

Complete line of **AMMONIA VALVES AND FITTINGS** *Also* **EVAPORATOR PRESSURE CONTROLS** *Ask for Free Catalogs*

DERSCH, GESSWEIN & NEUERT INCORPORATED

4849 W. Grand Ave., Chicago 39, Ill.

When the chilled bushings reach the assembly point, they are manually removed through small access doors and fitted easily into the roller units. When they warm to room temperature, the bushings expand to original size to form a tight fit which can withstand 25 tons' pressure!

Because it boils at minus 114.6 F, "Freon-13" is best adapted to use in cascade systems, in which a higher boiling refrigerant like "Freon-22" is used as the condensing medium. Cascade systems actually consist of two separate refrigeration systems, the higher temperature one functioning only to extract heat from the second refrigerant after the latter has done its cooling work. In cascade systems, the high pressure of saturated liquid "Freon-13" at room temperature during stand-by periods is eliminated by including an expansion chamber in the refrigeration system.

Although the compressor for use with "Freon-13" must ultimately be designed especially for it to achieve maximum efficiency, Du Pont engineers pointed out there are many fractional horsepower hermetic or semi-hermetic reciprocating compressors, originally designed for use with "Freon-22" or "Freon-12" which have been modified to give reliable, economical low-temperature cycles with "Freon-13".

Sizes from fractional horsepower installations up to 50 tons capacity are being produced with reciprocating compressors for temperatures of minus 70 F to minus 125 F. Certain installations, by two-staging the "Freon-13" and cascading the high stage with "Freon-22", are producing temperatures lower than minus 150 F.

Because "Freon-13" has about the same low moisture solubility as "Freon-12" care must be exercised in de-hydration of systems before the refrigerant is added. Refrigeration dryer cartridges always should be included in the refrigerant circuit.

Like "Freon-22" at temperatures below zero Fahrenheit, "Freon-13" is not miscible with oil and, therefore, requires oil separators at all temperatures. Conventional low-temperature refrigeration oils, dewaxed below minus 70 F., are used.

MANUFACTURERS' NEWS

Environmental Equipment Institute Announces Seal of Approval

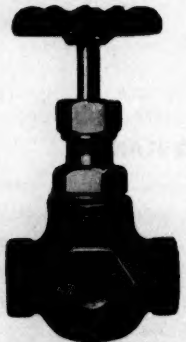
THE Environmental Equipment Institute has awarded its Seal of Approval to seven member companies. These companies manufacture equipment for producing high and low temperatures, low pressure, humidity, salt spray, and other conditions found in various environments on the earth. The award is given only to companies having engineering staffs adequate to design and manufacture this exacting type of equipment. Each company so honored has satisfied the Institute that it has a record reflecting the highest standards of business ethics. Thus, for the first time in the history of environmental testing, purchasers of this type of equipment have available a list of companies with assured reputations for honesty, integrity, and engineering competence.

Purchasers under the Seal of Approval Program receive a Registration Certificate for each piece of environmental test equipment, after it has satisfactorily passed its acceptance tests. This is evidence that they have bought equipment from a manufacturer who is participating in this voluntary plan for upgrading the industry. The Certificate also authorizes them to register complaints regarding the equipment with the Environmental Equipment Institute.

The manufacturers under the Seal of Approval Program guarantee that the equipment conforms in every respect to the specifications for construction and performance agreed upon at the time of purchase. Should a customer, at any time,

SHANK

AMMONIA VALVES AND REFRIGERATION PRODUCTS



RELIEF VALVES

For Ammonia and Freon. One Piece body design—rustproof finish. Internal construction—stainless steel—will not corrode. Positive relief action. Pressures from 75 to 400 lbs.

3-WAY DUAL SHUT-OFF VALVE

For use where Refrigeration Codes require dual relief valve installations. Stainless steel stem. Indicator plate on hand wheel shows position of valve shut off. Completely rust-proofed.

See your jobber—or write us for prices.

CYRUS SHANK CO.

4650 W. 12th Place, Chicago 50, Ill.

New DRY TAMP PERMAMix Floor Patch

Permamix-C for patching in temperatures from 5° above to 30° below zero.

DRY TAMP MEANS SPEED • No sticky mass to dig out of the drum or to handle • Permamix dry pours • sets instantly • feather edges perfectly • no production delays • non-skid surface.

ALL TEMPERATURE • Won't freeze • can be stored or used in any temperature • will store indefinitely • a stock room item • will not "set" in drum whether open or covered. Mistakes just can't happen. Tamp in place and traffic rolls.

CUTS MAINTENANCE COSTS on concrete, brick, tile or asphalt floors • no special equipment or skill needed • a one man job • comes in durable 50 lb. net wt. fibre drums • solve your floor patching problems for good.

Write for Details Now!

PERMAMIX CORPORATION

220 N. LA SALLE STREET CHICAGO 1, ILLINOIS

feel that such is not the case, he can ask the Institute to investigate. The Institute will look into all such charges. When necessary, it will appoint a committee of engineers from the staffs of other manufacturers to evaluate the facts. A finding by this committee to the effect that the manufacturer has willfully misrepresented his product or failed to satisfy legitimate claims of the customer, will cause the offending manfuacturer to lose his right to the Seal of Approval.

The following manufacturing members of the Institute are the first to receive the Seal of Approval under the new program:

Alpha Electric Refrigeration Company, Detroit, Mich.

Bemco, Inc. North Hollywood, Calif.

Cincinnati Sub-Zero Products, Cincinnati, Ohio

Harris Refrigeration Company, Cambridge, Mass.

Standard Cabinet Company, Carlstadt, N. J.

Tenney Engineering, Inc., Union, N. J.

Webber Manufacturing Company, Inc., Indianapolis, Ind.

Menzies New Servel Head

THE election of Duncan Cameron Menzies as president, general manager and a director of Servel, succeeding W. Paul Jones who becomes vice-chairman of the board, has been announced. He formerly was executive vice-president and general manager of Ball Brothers, Inc., Muncie, Ind.

Transportation Refrigeration Engineer for Liquid Carbonic Co.

THE appointment of Rollin Allyne as transportation refrigeration engineer for the Compressed Gas Division of the Liquid Carbonic Corporation has been announced by B. W. Goulding, vice-president of the Division.

In his new duties, Mr. Allyne will work closely with members of the transportation field to further develop the use of dry ice in the transportation of perishables in highway and railroad equipment. He will make his headquarters in the general offices of Liquid Carbonic Corporation in Chicago.

Mr. Allyne has been active in developing improved methods for transporting perishables by rail and truck for many years both in Army and civilian life. During his civilian career, in addition to designing new equipment, he worked with shippers in conducting many over-the-road tests. In the Army, he served with the Transportation Corps for six years, 1939-1946, and was recalled as a Lt. Colonel in 1951 to conduct extensive research on the transportation of perishables by refrigerated truck and railroad equipment for application to overseas shipments.

He is a member of the Society of Automotive Engineers.

York Names Serfass and Joslin Vice-Presidents

TWO YORK Corporation executives, Ray K. Serfass, general sales manager, and J. M. L. Joslin, manager, industrial relations, have been named vice-presidents of the York, Pa. air conditioning and refrigeration firm, according to an announcement by Stewart E. Lauer, president.

Mr. Serfass graduated from York Corporation's student training program in 1932 and has been with the corporation ever since, devoting all his efforts to sales and sales direction.

Before joining York Corporation in 1948, Mr. Joslin had a varied and successful career in the field of industrial relations including connections with Sharp & Dohme, Inc. and Firestone Tire & Rubber Company.

Wieden Unarco Consultant

HERBERT J. WIEDEN, formerly president of Preco, Inc., Los Angeles, has been retained as a consultant by the Union Asbestos & Rubber Company of Chicago, Edwin E. Hokin, president, has announced. Mr. Wieden will devote his time, Mr. Hokin said, working with Unarco engineers in improving the design of refrigerator car parts, including air circulating fans. A resident of Pasadena, Calif., Mr. Wieden said he plans to "commute" between his home on the West Coast and Chicago.

NEW... ESKIMO POWER LIFT

FOR YOUR PRESENT CRUSHER

The Eskimo power lift is engineered to fit in with most of the present crushing equipment in use. It speeds up your crushing and sizing operation by eliminating the lifting of ice by hand into the crusher.

Eliminates back injuries due to strain of lifting — No more ice tongs into the crusher — no more mashed toes — more crushed ice per hour.

This unit requires very little space and is designed so that, in sizing operation particularly, you may run the lift down when there is still about 100 lbs. of ice to be crushed. You may put the next block of ice on the power lift and have it in position before your crusher is empty. Height easily adjustable to your needs. Parts coming in contact with ice are galvanized for sanitation.

See this and other advanced labor saving ice equipment in
CINCINNATI, NOV. 9-12
Natl. Assn. of Ice Industries Convention

SOLD BY BALLARD SALES COMPANY

"One Call For All"
Top Quality Ice
Equipment & Supplies

BALLARD
SALES COMPANY
P.O. BOX 1121, FORT WORTH, TEXAS

York Announces New Organization Set-Up

A SUBSTANTIAL realignment of the York Corporation's organization both at headquarters in York and in the field, effective October 1, 1954 has been announced by Stewart Lauer, president. In explanation, Mr. Lauer said that the new basic plan of operation sets up three self-contained divisions, responsible to the president, as contrasted with the straight functional organization plan under which the company has been operating since 1928.

In the old plan, the president was responsible for coordination of the functional groups of sales, engineering, manufacturing, financial and industrial relations and for the net profits resulting. In the new plan, the division heads will be responsible for the profits of their operations, and the president will be responsible to the directors for the combined results of these operations.

York Corporation's business has grown to $90 million annual sales, six times the volume in 1928. Hundreds of new products, for new markets, introduced during this period, have made operations under the old functional plan very complex and unwieldy. Also, the markets and methods of distribution have gravitated into several distinctly different patterns and both engineering and manufacturing processes have followed the same trend.

The Industrial Division is headed by R. K. Serfass, vice-president and general manager. It is responsible for sales, engineering, manufacturing, accounting and procurement at headquarters and for direct contract sales to consumers in the field through the district industrial organization. It will design, produce and market the technically engineered products and systems for central station air conditioning and refrigeration with their contingent of supplies, repairs and maintenance service.

The Commercial Division is headed by J. K. Louden, vice-president and general manager. It is responsible for the same general functions as the Industrial Division, except that it will market products through distributors and dealers in the field, utilizing the district commercial organization for this purpose. It will design and produce pre-engineered unitary or packaged products, which its distributor-dealer organizations will re-sell and install as units or in central station systems within the limits of their franchise.

The International Division is headed by C. B. Morrison, managing director, with offices in New York and London. It is responsible for all overseas sales and profits therefrom. Products and systems marketed by this division will be supplied from the Industrial and Commercial Division plants in York, and the plants of the company's subsidiary in England.

The president's staff, which under his direction will collaborate with, assist and advise the divisions, includes M. G. Munce, vice-president in charge of marketing services; J. M. L. Joslin, vice-president in charge of industrial relations; M. F. Dick, general attorney; R. F. Lauer, vice-president in charge of engineering and research; W. F. Lynne, secretary and treasurer; and D. M. Magor, vice-president and controller, who is responsible for over-all corporation accounting and for tax matters.

Du Pont Reduces Price on Freon 22

A SECOND reduction within the year on the price of "Freon 22" monochlorodifluoromethane, an industrial refrigerant and propellent, has been announced by the Du Pont Company. The new price is $.051 (five and one-tenth cents) per pound below the last price adjustment of September 28, 1953.

The company said the new price reduction was made possible by more efficient operation and increasing volume. A new unit for "Freon 22" went into operation at Deepwater Point, N.J. early this year, while another is currently under construction at Louisville, Ky.

CATALOGS AND BULLETINS

New Bulletin on Spray Cooling Towers

BULLETIN 312, covering the complete line of standard atmospheric spray cooling towers manufactured by the Binks Manufacturing Company, Chicago, Ill. is now available.

This new 12 page Bulletin is filled with helpful information for those who specify cooling towers. It contains new and simplified selection tables for determining correct tower sizes. All the engineer has to know is the refrigeration load and the cooling range and design wet bulb conditions. The tables do the rest.

The Bulletin also includes full information on the construction details of Binks Type H and T atmospheric towers, including over-all dimensions, weights, etc. required for design and construction.

The manufacturer claims light exclusive features for these standard towers, including: a balanced spray system with brass clog-proof nozzles, steel louver posts, shop-formed and galvanized after fabrication, slip fit louvers that lock securely in position, all louvers of clear all-heart grade redwood, and heavily coated steel basins.

Pump Catalog

A CATALOG has been issued by The Deming Company, describing practically every industrial pump made by the company. Identified as "Industrial Catalog I-54," 108 pages, this new catalog includes new additions such as new, large capacity deep well submersible pumps for wells 4 in I.D. and 6 in I.D. or larger; new, two-bearing and suction centrifugal pumps, "Motormount" centrifugal pumps for sprinkling and air conditioning applications particularly; and pumps for boiler feed service. Also has several pages of useful information related to liquid materials handling problems.

DIMCO CAST ALUMINUM FIN EVAPORATING COIL

★ *Saves Space*

★ *Saves Weight*

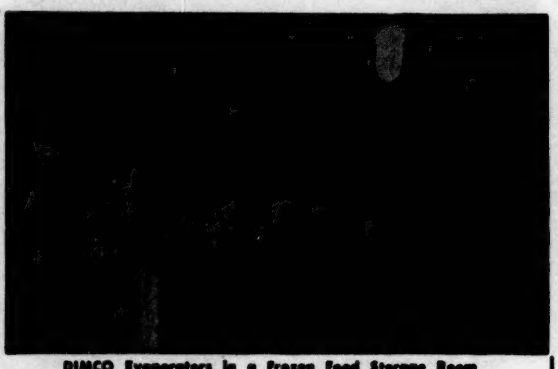
★ *Saves Cost*

CAN BE USED WITH ANY REFRIGERANT

Write for descriptive folder

DETROIT ICE MACHINE COMPANY

2613 Twelfth St., Detroit 16, Mich.



DIMCO Evaporators in a Frozen Food Storage Room at great Lakes Terminal Warehouse, Toledo, Ohio. A typical installation facilitating palletizing.

Wolf-Linde Catalog

A NEW catalog of the Wolf-Linde line has been issued by Dersch, Gesswein & Neurt, Inc., Chicago, Ill., which might be regarded as a text on the application of back pressure valves for air conditioning, liquid cooling and for special installations requiring control of evaporator pressure. Helpful and definite instructions are offered for selection of the right size and type of valve for each specific application. Provided also is much information for the effective installation of controls. Among the industries that have found Wolf-Linde evaporator pressure controls of value in their refrigerating systems are those engaged in brewing, milk and soft drink bottling, chemicals manufacturing, food storage, frozen food processing, etc.

Industrial Truck Chargers

FOUR new models of selenium, completely automatic battery chargers used to charge six cell batteries of either the lead acid or Edison type are described in detail in this new 4-page bulletin of Ther Electric & Machine Works, Chicago, Ill. Charging rates required by various ampere hour battery sizes are described. Charging characteristic graphs and useful information about length of charging time are prominently displayed. A schematic diagram depicts circuit and outlines function of the components.

Centrifugal Pumps

A 12-PAGE form "Centrifugal Pump Fundamentals" has been issued by Ingersoll-Rand, New York City explaining the principles of operation, defining the various terms used in pump calculations and working out typical pump problems. Written in simple language and illustrated with easily understood diagrams, Form 7287 covers such subjects as centrifugal pump analogies, how to calculate, total head or pressure, capacity or quantity delivered, specific gravity or weight of liquid, hydraulic and brake horsepower, and pump pressure.

Hand Torch Catalog

A NEW 36-page catalog is offered by Air Reduction Sales covering their complete line of torches and tips for oxyacetylene cutting and welding. Every Airco standard torch and tip is listed along with necessary mixers, extensions, adapters and accessories that are used with the torches. Well illustrated with charts, and fully descriptive.

Rubber Base Paints

A FOLDER has been issued by Alfred Hague & Co. Brooklyn, N. Y. describing rubber base paints and Rubalt products (Grad "RA" black paint) for corrosion resistant coating. Folder gives composition, general characteristics, use data, case histories, and other information on this important production product.

Bulletin on Trane Climate Changer

A BULLETIN describing the new Climate Changer line has been announced by The Trane Company, manufacturing engineers of heating, air conditioning, ventilating and heat transfer equipment. The bulletin explains step by step how it is possible to include or omit any combination of the six phases of air conditioning with the Climate Changer. This is accomplished without interfering with its basic design in any way. Trane Climate Changers heat and cool air. They also are equipped to humidify and dehumidify the air as well as filter dust and dirt from the atmosphere.

Backward Curve Blower

A FOUR-PAGE bulletin describing the new "Backward Curve Blower" being manufactured by The Peerless Electric Co., Fan & Blower Div., Warren, Ohio is now available. The bulletin describes mechanical and engineering features. The blower is manufactured in all N.A.F.M. sizes from 12½ in. to 36½ in. It has self-limiting horsepower characteristics.

Pipe and Fittings Catalog

A NEW 1954 Pipe and Fittings Catalog beautifully illustrated in two colors is announced by the Williamson Heater Company, Cincinnati, Ohio. This new catalog is designed to acquaint dealers with Williamson's complete line of prefabricated ducts and fittings for heating and cooling systems.

Classified Advertising

All classified advertisements are payable in advance. Except for Positions and Help Wanted classifications, this section is reserved exclusively for USED equipment.

RATES: 20c per word; minimum 25 words. $2.00 per line for bold face headings; $15.00 per inch for line listings.

ICE PLANTS—for sale

FOR SALE — COMPLETE ICE PLANTS
20 tons to 150 tons.
AMMONIA COMPRESSORS
10x10 York, 125 h.p. syn. motor 360 r.p.m.
10x10 York direct connected to Unaflow steam engine.
9x9 & 7½x7½ York high speed.
5x5 York, V belt drive 20 h.p. motor.
MISCELLANEOUS EQUIPMENT
Two 100 ton York Economizers.
York Defuser with 2200 feet of ¼" pipe.
130 h.p. Diesel engine with 109 KVA generator.
75 h.p. 300 r.p.m. synchronous motor.
75 h.p. slip ring motor with automatic starter.
25 to 50 h.p. induction motors.
JOHN F. CARSON
"A" & Venango Sts. Philadelphia 34, Pa.
Phone GArfield 6-2221

FOR SALE — Ice plant situated on highway 61-67 at Festus, Missouri; in growing community. 80 tons of refrigeration. 2 Yorks and 1 Frick ice machines, 320- 300# ice tank with ample storage for 2000 blocks of ice. Two Fairbanks Morse 140 h.p. each, needle bearing engines. Three ice vending stations and one at plant just recently installed. Fully equipped. Desoto Dairy Ice & Supply Co., Desoto, Mo.

FOR SALE — One ten ton York ice plant. 3x3 self-contained York, 4x4, 5x5, 8x8, 9x9 Yorks. 175— 51" ice cans. 10"x7" Worthington booster compressor. Write E. Niebling, 1546 St. Clair Ave. Mt. Healthy, Cincinnati 31, Ohio.

FOR SALE
COMPLETE ICE & COLD STORAGE BUSINESS 60 ton ice capacity with 215,000 cubic foot fire-proof concrete-brick cold storage warehouse. 5 car private siding on 4 railroads. Large truck dock. Only plant in twin cities of 75,000 and surrounding communities. For immediate sale due to illness. Contact Smith & Co., 811 N. State St., Champaign, Ill.

FOR SALE—USED ICE PLANTS & REFRIGERATING EQUIPMENT
Complete Ice Plants 20 to 100 Tons
Ammonia Compressors, 3" x 3" to 12½" x 14½"
Condensers, Cranes, Blowers, Scoring Machines, Ice Canes—Various sizes.
Write or wire us on any equipment you may need.
ENTERPRISE EQUIPMENT CORPORATION
77-79 Alexander Street, Yonkers, New York
Cable Add.: ENECO Ph.: Yonkers 8-8118-9

USED EQUIPMENT—wanted & for sale

FOR SALE — New 10½ x 10½ twin BAKERS, with 200 h.p. synchronous motor; 4 x 4 high-speed YORK; other equipment. Write us your needs. Born Co., 80 E. Jackson, Chicago 4, Ill. Wabash 2-3299

WANTED — good horizontal ammonia condenser 10 ft x 20" diameter, and receiver sufficient for 6 x 6 H.S. compressor. Diamond Ice Co., 120 So. Fifth, Purcell, Okla.

USED EQUIPMENT—Continued

FOR SALE — York, Frick, Vilter compressors 6x6, 7½x7½, 8x8, 9x9, 9½x9½, 10x10, small self-contained units, ice plants, cranes, cans, condensers brine coolers, agitators, blowers, Diesels. Parke Pettegrew, 379 W. Broad St., Columbus 8, Ohio.

FOR SALE
Several Frick, York & Vilter ammonia compressors. Condensers, brine coolers, accumulators, Oil traps, Valves, flanges, fittings of all kind and sizes.
We buy and sell refrigerating equipment of all kinds.
Write or wire for detail list.
DAVID BERNARD REFRIGERATING SERVICE
72 Broadway Irwin, Penna.

FOR SALE — One vertical condenser, 90 tons cap.; York ammonia compressor Y-15; brine cooler 15 tons ice cap.; 2 blowers for 3 & 5 h.p., ammonia receiver 15 c. feet; one Moeller record thermometer for brine tank (brand new). Write Box 1311, Ponce, Puerto Rico.

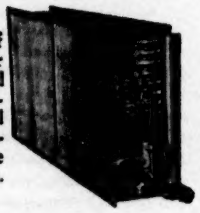
QUICK RESULTS with Classified Ads

The classified section is the market place of the industry. Get fast action on equipment you want to buy or sell. Buyers are watching for equipment they can use. Convert idle equipment into cash. INDUSTRIAL REFRIGERATION classified rates are low — results quick.

HEAT TRANSFER EQUIPMENT
REMPE CO.
Founded 1890

PIPE COILS—FIN COILS

FOR REFRIGERATION, AIR CONDITIONING, HEATING



Coils and Bends of any Metal, Size or Design. Engineered to your requirements. Designed and built for longest life and the least maintenance.

Send your problems to us for engineering assistance.

REMPE COMPANY

348 N. Sacramento Blvd., Chicago 12, Ill.

FRED OPHULS & ASSOCIATES

Consulting Engineers

112-114 West 42nd St. New York City 36

Industrial Power Plants
Refrigeration and
Cold Storage Warehouses,
Reports, Appraisals and Management

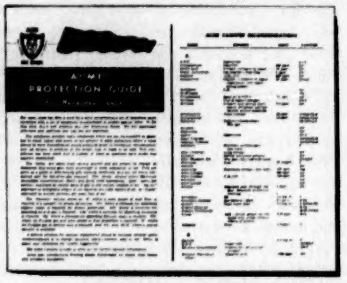
VAN RENSSELAER H. GREENE

ENGINEERS

COMPLETE PLANT DESIGNS INCLUDING BUILDING AND EQUIPMENT

11 PARK PLACE NEW YORK 7, N. Y.

DO YOU HAVE A GAS HAZARD?



New ACME PROTECTION GUIDE
lists 433 gases, mists, fumes and dusts and gives specific protection information.

If you have any hazardous condition involving gases, mists, fumes or dusts, it will pay you to get a copy of Acme's new Protection Guide. Here, in one handy reference folder, is a most comprehensive list of trouble sources including pertinent data, limits, and the Acme canisters designed to give you dependable protection for each specific hazard.

Write today for your free copy of the ACME PROTECTION GUIDE.

Acme Protection Equipment Co.

Manufacturers of Acme Full-Vision Gas Masks
1211 Kalamazoo Street,
South Haven, Michigan

BASIC REFRIGERATION

The Book of "Refrigeration Knowledge" by Guy R. King

Basic Refrigeration is designed to give a good working knowledge of modern refrigeration principles, equipment and its operation. Beginning with the fundamentals and generally understood materials, it progresses through basic details of equipment to application, operation and servicing of systems.

29 Chapters—340 ILLUSTRATIONS

526 PAGES

Different refrigerants and the various sizes of equipment are all given equal treatment.

$6.00

NICKERSON & COLLINS CO.,

433 N. Waller Ave. Chicago 44

ADVERTISERS

Acme Protection Equipment Co. 58
Alco Valve Co. 12
American Hair & Felt Co. 6
Armstrong Cork Co. ..... Insert, page 25
Armstrong Machine Works 40

Ballard Sales Co. 55
Bateman Foundry and Machine Co., Inc. 44
Butcher Boy Refrigerator Door Co. 1

Chicago Nipple Mfg. Co. 42
Classified Advertising 57

Dersch, Gesswein & Neuert 53
Detroit Ice Machine Co. 56

Enterprise Equipment Corp. 57

Frick Co. 7

Gay Engineering Co. 36
Greene, Van R. H. 58

Howe Ice Machine Co. 49

International Salt Co. Inc. 48

Jamison Cold Storage Door Co. Back Cover

Kramer Trenton Co. 41

Mercoid Corp., The 44

National Pipe Bending Co. 46
Nickerson & Colins Co. 58
Nitrogen Div., Allied Chemical & Dye Corp. 50

Ohio Galvanizing & Mfg. Co., The 45
O'Neill Floors Co., E. H. 52
Ophuls & Associates, Fred 58
Owens-Corning Fiberglas Corp. ..... Inside Back Cover

Pacific Lumber Co. 10
Perfection Ice Scoring Machine Co., The 46
Permamix Corp. 54
Phillips & Co., H. A. 45

Refrigeration Engineering Co. 39
Rempe Co. 58

S & S Vending Machine Co. 42
Schoelkopf Mfg. Co. 51
Shank Co., Cyrus 54

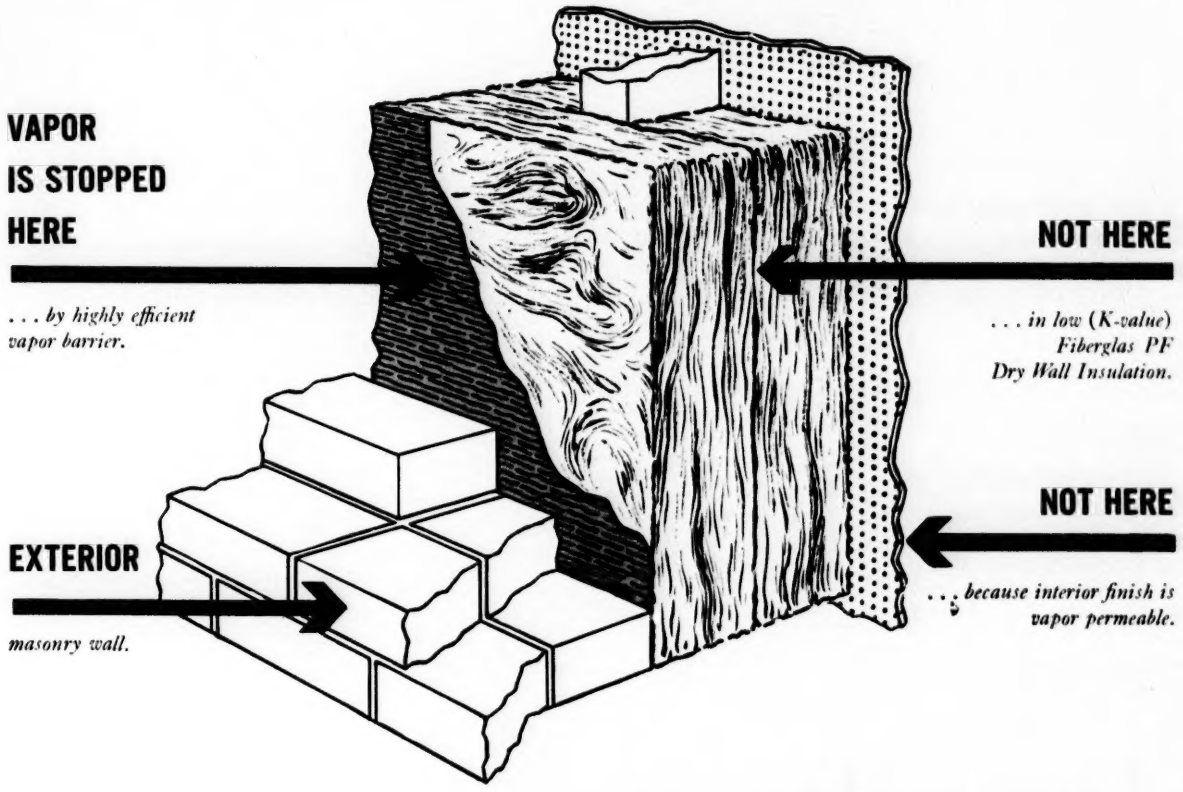
Taylor Instrument Companies 9
Texas Co., The ..... Second Cover

Vilter Mfg. Co., The 37
Vogt Machine Co., Henry 2

Wanted and For Sale Advertising 57
Watkins Co., J. E. 47

York Corp. 8

WHY THE TREND IS TO FIBERGLAS DRY WALL!



stays dry...stays efficient!

No "locked-in" moisture to cause trouble in Fiberglas PF dry wall construction

Fiberglas* PF Insulation in dry wall construction stays dry! Here's how. A single warm side barrier stops nearly all vapor. The little that penetrates passes easily through Fiberglas PF *as harmless vapor*. There are no internal barriers to cause vapor to condense into damaging moisture.

You realize big installation savings, too. Large panels of Fiberglas PF are quickly and safely installed between treated wood studs or with metal clips. Should mechanical damage ever occur to the vapor barrier, the panels are easily removed, the damage fixed, and the same panels put back into place.

Today, the recent installation of Fiberglas PF in several large warehouses continues the trend to PF—a trend begun 15 years ago.

Fiberglas Insulations come in a wide range of types, sizes (cut to order, if you want), thicknesses and densities.

OWENS-CORNING
FIBERGLAS

Outstanding advantages of Fiberglas insulations

Extremely low thermal conductivity • maximum versatility • a product for every need • low installation and maintenance costs • highly moisture-resistant • easy to cut and apply • good handling characteristics • fibers are glass and will not burn or rot • lightweight • odorless • will not expand or contract • effective for life of building.

*Fiberglas is the trade-mark (Reg. U.S. Pat. Off.) of Owens-Corning Fiberglas Corporation.

Owens-Corning Fiberglas Corporation
Dept. 165-K, Toledo 1, Ohio

Please send me the literature I have checked.

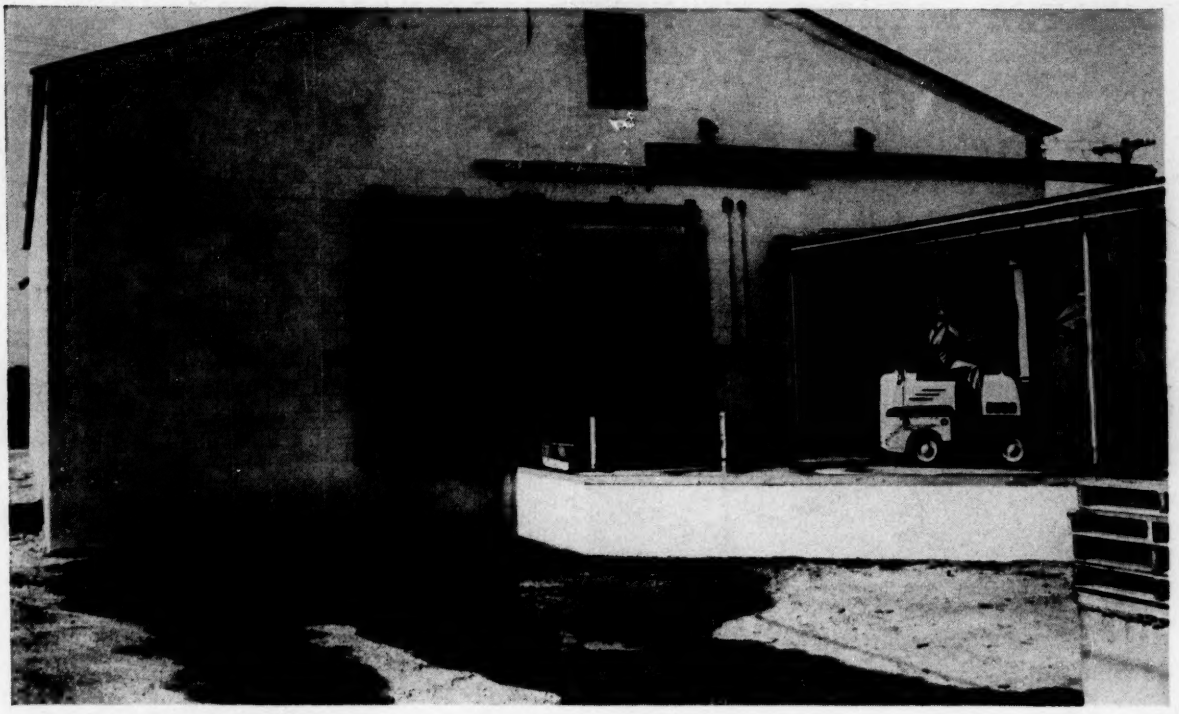
- ☐ Why the Trend is to Fiberglas
- ☐ Insulations for Low Temperature Structures and Equipment
- ☐ PF Design Details

Name_____

Title_____ Firm_____

Street_____

City_____ State_____



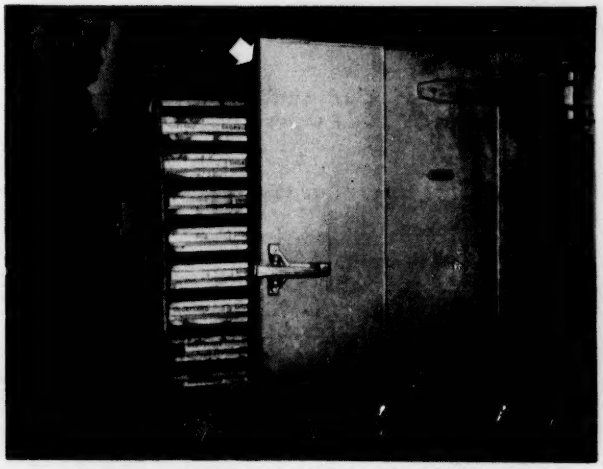
HORIZONTAL SLIDING DOOR gives a large opening in a minimum space while vestibule doors save on refrigeration. When closed, door permits employees to enter or leave through separate personnel door.

Special Jamison Doors Solve Problems at Frozen Food Plant

In processing choice quality frozen vegetables, Shoreland Freezers, Inc. of Salisbury, Md., uses two types of Jamison Doors especially designed to end icing and traffic problems.

Jamison Doors will also solve your problems. Consult your architect or write to JAMISON COLD STORAGE DOOR CO., HAGERSTOWN, MD.

More JAMISON Doors are used by *more* people than any other Cold Storage Door in the world.



NEW JAMISON FEATURE PREVENTS ICE FORMATION. The —40°F. blast freezing rooms use Jamison Double Super Freezer Doors with a new Jamison feature to prevent icing. Heater cables embedded in the frame and also in the active leaf near the astragal (see arrow) prevent ice formation at the gasket contact area. Gaskets last longer and the door opens easily.